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## NEWS IN BRIEF

### Euro mergers needed - MP

EURO MP and deputy chairman of Ferranti, Basil de Ferranti, last week urged European computer companies to stop looking for public money and get behind the drive to create European institutions big enough to challenge the Americans and the Japanese.

De Ferranti, speaking at the British Computer Society in London, said that the principal reason the Americans had produced such big companies was the size of the local market they had to operate in. Europeans should speed up the integration of defence and ETT integration to create the same kinds of market for the European companies.

### Bigger, cheaper

IBM in the US has added seven models to its family of 3274 terminal controllers. They use 32K-bit memory chips instead of the 16K-bit devices in the four older 3274 machines and come with memory capacities of either 64K-bytes or 128K-bytes. With 128K-bytes they still cost less than an older 64K-byte 3274 with a 64K memory upgrade.

### Tandem expands

TANDEM, builder of the "Pall-see" NonStop minicomputer range, is expanding its manufacturing capacity in the US by 80%. It is spending nearly \$14 million on a new factory at Reston, Virginia, that will employ 300 people by 1983. Another 75 will work at a plant being leased at Santa Clara, California from printer firm Data-products.

### Fujitsu US move

FUJITSU is the latest Japanese electronics company to announce that it will market personal computers in the US. It will introduce its personal computer terminal based on a word processing technique in the Spring.

### Double CTL order

FAST-GROWING electrical wholesaler, the British Distributing Company, has ordered two CTL 8046 systems from Computer Technology Applications which include real time integrated sales order processing, stock control and online customer invoicing at the warehouse counter. There will be a total of 36 terminals at CDC's three warehouses.

### Pascal meeting

THE first meeting of the UK UCSD Pascal users' group, USUS-UK, is to take place on January 30 and 31 at the Dragonair Hotel in Bristol. Aims of the group include the compilation of a software library. Each meeting will provide the copying facilities.

### Dealing with fires

FIRE brigades represent a well-defined market for Clifton, a computer-assisted fire mobilising system from Ferranti Computer Systems. Based on a Ferranti Argus 700 minicomputer, Clifton comes with four VDU's and software that enables a database of available appliances and personnel to be created and assessed.

# COMPUTER WEEKLY

## New hopes for US firms in Iranian market

by Keith Jones

WESTERN computer manufacturers are waiting in the wings for the cue from the new US government to resume trading in Iran. Those like Control Data and NCR which filed lawsuits for losses caused by the revolution are among the 300 US companies now looking for their claims to be resolved by the International Tribunal being set up as part of the deal that included the release of the hostages.

IBM still has a branch with 170 Iranian nationals servicing a customer base with mainly office products kit, but since the trade embargo imposed by the US government last year they have received no spare parts. IBM said that it had no information about

the US government's intentions regarding trade with Iran.

A spokesman for Honeywell Italia, which includes Iran in its territory, said that his company was ready to resume business with its Iranian distributor, Isiran, which had 700 people when the revolution started in 1979 and which still existed "on paper".

Isiran serviced 12 big Honeywell systems with key public sector customers like the Ministry of Finance, the army and the air force. The Honeywell spokesman said that Isiran had plenty of spare parts when Honeywell had to pull out more than a year ago but there had been no contact with Isiran for some time and the current level of service was unknown.

Honeywell has regarded Iran as a very good market and was trying

to set up a joint sales venture to address the private sector before the trouble started.

Univac was also doing well, having set up a joint venture with the Iranians in 1978 to sell the complete range of Univac equipment and to build the V77 minicomputer under licence. Univac's parent, Sperry Corp, is suing the Iranian government for \$15 million.

Control Data, which filed a \$28 million lawsuit last year against "Iran, Iranian firms and individuals", had established a joint venture to build its Plato computer-based training terminals and was setting up an institute for technician training.

CDC said that it had maintained contact with its former Iranian national employees even though

the 40 US citizens working there for CDC had to be evacuated early in 1979.

NCR is suing the Iranians for \$5 million, its 62% interest in its Iranian sales and service operation having been expropriated by the Iranian government. NCR kit there consists mainly of accounting machines and point of sale terminals, and former employees have now resorted to "cannibalisation" to keep equipment running, according to an NCR spokesman.

The UK's Scicon consultancy, which has a major presence in the Middle East, pulled out of Iran around June/July 1978, several months before the trouble started, purely because contracts there had been completed.

ICL has never had an operation in Iran.

## More jobs this year, says forecast

JOB opportunities in computer for graduates in 1981 should be reasonably good, despite the downturn of last year when two big withdrew large numbers of offers.

That is the view of the Association of Graduate Careers Advisory Services and the Standing Conference of Employers of Graduates who admit that their joint company forecasts for 1980 were realistic, and now predict recruitment in 1981 will be "slightly up" on the 1980 figures.

Total graduate recruitment in 1980 was 20% down on 1979. Sectors such as software have most of whose recruitment among graduates, have a particularly chilling effect on the labour market, while the fact that there are only a few graduates cut back without making up the gap, explained Tony Blair AGCAS.

Withdrawing job offers, which have been done in 1980 by ICL, CAP, was unlikely to cause firms were being more cautious in recruiting. Robert But, he added, these moves were unfortunate in that they made it look as if the whole of the industry was in trouble. In contrast, over 700 jobs had been received by ICL.

It was, however, the recession which was being felt in manufacturing, was being felt in the recession much more than in service areas. Some optimism was expressed by David Jevons SCOE, who says that the recession would turn by the end of the year.

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# Pay freeze as ICL heads for £30m loss

A FIRST quarter loss of £20 million was disclosed by ICL's chairman Philip Chappell, at the company's annual meeting earlier this week. The company will also produce a loss for the second quarter of the financial year.

With the business expected to break even for the second half of the year, the year-end loss is predicted at about £30 to £35 million.

As a result of the figures, ICL has told hourly paid employees that the company cannot afford a general increase in pay during 1981.

## Recession

Chappell blamed the losses on adverse trading conditions, the continued strength of sterling and the current deep recession in the UK. Deliveries in the first quarter were particularly low.

The chairman said that given a revival in worldwide markets and especially in the UK he expected a significant improvement in 1981/82.

Action to conserve cash flow has been given a first priority in the company.

Referring to the closure of

Winsford, Chappell said that the cost of this would be borne as an extraordinary item in the accounts for 1981. A figure of £10 million was suggested as a likely cost (Chappell said he would not disagree with this figure).

## Japanese impact

In the year 1980 the company disposed of 14% of its property in the UK. Further premises disposals are being considered for 1981.

When Chappell was questioned about the possibility of further major closures, he said that there were no current plans but that matters relating to production were under continuous review.

He expects expenditure on R&D to be maintained. He further announced that 750 orders have been received for the ME29 with a possible turnover value of £75-£120 million.

He indicated that there were no plans to ask the government for financial support, and that ICL maintained very close relations with the Department of Industry.

The DoI is fully aware of the short term problems facing ICL and ICL's plans to surmount the problems, said Chappell.

He said the company would continue with the policy of going for medium and small computers. No conclusive answer was given to questions relating to the 2972 and bigger end of the range.

Chappell added that he believed the Japanese would have an impact in the UK market, place and abroad, and that ICL would not compete in the supercomputer business, which he defined as 20-30 MIPS.

The chairman indicated that there were adequate facilities with ICL's existing banks to finance the company and if needed these would be taken up.

## ICL LTD

A High Court Writ has been served on IPC Electrical Electronic Press Limited, publishers of Computer Weekly, by the Solicitor to ICL Limited and International Computers Limited. The Writ claims damages for libel contained in the article concerning ICL published on the front page of the January 29 issue of Computer Weekly.

## Redundancies at Altergo

THREE of the marketing staff at systems house Altergo were told last Friday that they were redundant. They included Calvin King (see Software File) who was to launch Altergo's latest TP aid, CPG.

The language.

Altergo managing director Dave Brownlee was unavailable for comment, but Tim Bourne, marketing manager, explained that the company was trying to cut down on overheads after a difficult financial year. "There's no way that we want to cut down on development, so we looked for a way of reducing expenses which wouldn't have a long-term effect."

One source suggested that Insac, which bought Altergo's marketing arm in the US, and still sells the TP monitor Shadow II there, had not fully paid for the purchase, but Insac managing director Peter Dine said that the deal had been long "signed, sealed and happily put away" and any problems Altergo had were not to do with the Insac deal.

comment, but Tim Bourne, marketing manager, explained that the company was trying to cut down on overheads after a difficult financial year. "There's no way that we want to cut down on development, so we looked for a way of reducing expenses which wouldn't have a long-term effect."

## BRIEFING... BRIEFING... BRIEFING... BRIEFING

### Compec for Manchester

COMPUTER WEEKLY is to launch a major new computing exhibition in Manchester this summer. Compec North, as the show will be known, will be held at the Lancaster Hall of the Belle Vue complex, Manchester, from June 23-25, 1981.

The show follows an analysis of visitors to Compec UK in November 1981 which showed that almost 80% of visitors came from the South East. Belle Vue, in Greater Manchester's major exhibition site, just 2 1/2 miles from the city centre.

### Herbert sale

A HERBERT-BASED consultancy has bought the computer division of the Alfred Herbert machine tool company, which was finally liquidated last year. The consultancy, Organisation De-

velopment Group, was formed in 1969. It now employs over 120 people and achieved sales of £24m last year. It will be moving the 40-strong division into new offices at Christchurch House, New Union Street, Coventry, in March, and will trade as Business Data Management.

"ALTHOUGH we're small now, we're going to be one of the companies of the 1980s," said Kenneth McGladery of Fleetbank, announcing last week that the firm's 1980 turnover of £250,000 was likely to double this year as Fleetbank develops its export potential.

### Same-day clearing

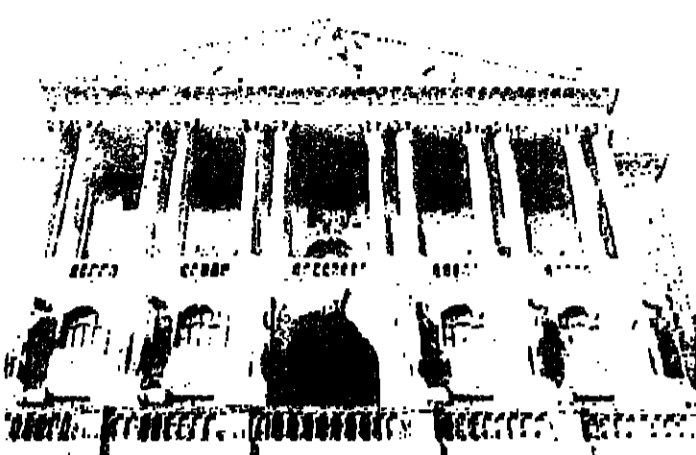
BASED on triple Barroughs 3670 mainframes, New York's Clearing House Interbank Payments System, CHIPS, is moving over to same-day clearing on October 1. At the moment dol-

lar payments between banks are not settled until the following morning.

### Viewdata plan

A MAJOR joint initiative for viewdata in the US, involving the Department of Industry, Logistics and British Telecom, is to be announced later this month by Industry Secretary Sir Keith Joseph.

One of the biggest disadvantages of the original centralised CHIPS system was that every bank, regardless of size, would have had to support in-house terminal equip-



The Bank of England - a major participant in the new automated payments system between banks.

## Chaps to go live in 1983

THE Clearing House Automated Payments System, Chaps, which was cancelled in its original form a year ago, has been given the go-ahead in its less expensive decentralised form.

As reported in Computer Weekly last year, the clearing banks will be linked to each other via British Telecom's Packet Switched Service and will take advantage of the closed loop facilities offered by PSS for security.

Chaps is expected to go live in stages in 1983 and will replace a large part of the existing manual Town Clearing procedure for handling same day clearing of large transactions between the clearing banks and the 200 or so other banking concerns in the City of London, many of them international, that maintain accounts with the clearing banks. The Bank of England and National Giro will be major participants with the clearing banks.

One of the biggest disadvantages of the original centralised CHIPS system was that every bank, regardless of size, would have had to support in-house terminal equip-

ment and a leased line to the ICL 2960 host. Many of the smaller banks objected strongly to the costs they would have had to bear. With the new Chaps system they can carry on using paper if they

● Turn to page 6

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## Banks aid small high tech businesses

THE PAST few weeks have seen a plethora of new small business and venture capital loan organisations, mostly with computer and high technology companies in mind, springing up.

Most recently, the Wilson Committee on Finance for Industry was told that there is a serious shortage of equity finance for small companies in Scotland.

The Royal Bank of Scotland, partnered by Scottish Western Trust and James Finlay and Co, has set up a fund with initial capital of £3 million. The object is to provide equity finance of between £50,000 and £500,000 for small and developing companies, particularly in the computer and high technology fields.

It will also assist individual shareholders to dispose of their shares in private and unlisted companies.

The European Investment Bank, the BEC's banking institution, is to increase its loans substantially to small- and medium-sized businesses in the UK's assisted regions.

After two years of attempting to operate the fund through the Department of Industry, the EIB is to make its services available through the Industrial and Commercial Finance Corp (ICFC).

In the years with the Department of Industry, the EIB made 128 loans totalling just £5 million. This compares with 521 loans made to entrepreneurs in the Irish Republic over the same period.

Finally, the government-backed loan guarantee scheme looks as if it will feature in the Budget. Under this scheme, the government will guarantee loans made by banks and others to small businesses.



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## Downtime

by Chad

### Information gaps

LOOKING for a go-ahead, on-the-ball area to build your shiny new factory? It seems you could choose no better place than Merseyside, from what I saw in an advertisement in a taxi the other day. The sign was placed there by Merseyside County Council in order to induce businessmen to come to their patch.

It read, "GEC Fairchild have chosen Merseyside Special Development Area for their first microprocessor plant in this country."

Apparently the news has not yet reached the Liverpool bureaucrats that the GEC-Fairchild deal was called off in July last year.

No, I'm sure it's not their fault. The mail is probably carried up the Viking Border by Galapagos tortoise. Speaking of Galapagos tortoise, an experiment with the mails was carried

out by some Logica staff while killing some time in their local boozer, the Blue Posts in Newman Street; Berners Street sorting office is right across the road.

They posted a letter addressed to the pub in the pillar box outside the door. It took four days to cross the road and return. The Logica people with their mathematical agility worked out that a Galapagos tortoise would have been considerably faster.

### No nudes is good news

FOOTNOTE to Rupert Murdoch's impending takeover of The Times: our Australian Press duke has promised not to thrust his Sun style of Journalism on to the Old Lady of Gray's Inn Road, and this has disappointed some people.

The boss of a large advertising agency let slip last week that he was planning, for Murdoch's first issue, to buy page three, slap a large nude across it (The Times can hardly refuse since they've printed one before) and headline it "Here's one for you, Diogenes!" Could become an old established British tradition, eh cobber?



## Keeping in time with ICL

THE Scottish end of ICL is busy organising a lecture next month, to be given in its stately home software centre at Dalkieth, admission to you only £50. The subject? Biorhythms.

A Mr Bernard Gilleeson of New York will be talking on how to use a computer to work out your biorhythms from your birthdate.

Fortunately for ICL it is not the first computer firm to fall into the elementary trap laid by this trendy subject. I have already had words with Sperry Univac over this (to no avail, I fear). Whoever thought up the trick of working out the three biologic cycles over your lifetime from your date of birth failed to recognise the fundamental difference (of which all programmers are aware) between integers and real numbers. There may well be biological cycles for your physical, intellectual and emotional well-being, and these

may even last 23, 33 and 28 days respectively as claimed, but there is no way these periods could be extrapolated over 30 years and still keep in time!

If the periods are real numbers they would have to be, by some miracle, exactly 23.00000... days and so on, and if they are integers there would have to be a digital biological clock to measure them. Who ever heard of a digital biological clock?

The other unquestioned assumption is why should the cycles all start at zero at your moment of birth anyway? Doubtless because your ascending birthdate triggers them off. Then you have to remember that the cycles get reversed by your swinging the wedding ring over the unborn babe to determine its sex.

On all these matters ICL had no comment. I'm waiting for the Treasury to bring in a tea leaf lady to help out with the economic forecasting.

## FOCUS

### Computer crime

THE NEW YEAR has not started well for the DP industry, with an uncalculated rash of computer crime scares featured in the national Press. It would seem the link between computer crime and college boys is now well proven.

The latest episode to set the alarm bells ringing all over the US, according to the Daily Mail, concerns the erasure of ten million items from a computer network memory and the alteration of programs, all completed just by connecting a small terminal to a phone and dialling the installation.

Repairs, it is reported, took three days and cost a surprisingly small £10,000. Given any encouragement, the average intellectual operations team could have produced similar havoc in the course of three minutes' dedicated work, with repair retrieval taking closer to three weeks.

### Cover-up

That eminent priest of computer crime, Donn B. Parker, immediately warned the world that education is now producing a new generation of computer criminals, vandals and practical jokes. Meanwhile, statistics presented at a recent NCC computer fraud seminar backed up the computer crime figures. It would seem that computer crime, particularly fraud, is subject to a blanket cover-up operation.

Frauds are most often discovered by accident with nothing revealing only 5% of all known cases. This figure does not surprise Rod Perry, of Coopers and Lybrand, who told the seminar the all controls cost money and the business involves risk. A balance must be achieved which will deter fraud while not introducing regrettable side-effects.

The worlds of computer crime, environmental disasters and privacy are interwoven. Categories, divisions and parameters, may much the staple diet of the industry, got heavily blurred and not just at the edges.

The IDPM has published figures suggesting that every month, £50 million worth of electronic equipment is damaged by fire. Practical contingency plans are called for.

Meanwhile, Good Housekeeping links computer information bases with Nazi storm-troopers, the evils of Swansea and the threat of a national census. The article called for greater vigilance and control, with the NCCL taking a close hand.

Even the NCCL head put Paula Hewitt would find a challenge to muster sufficient resources to provide full coverage. Such levels of vigilance and attention would leave most DPMs bemused. They already have enough problems on hand in meeting deadlines, rival sales teams, private department heads and (less frequently) the site engineering service team.



Professor Donald Michie is head of the Machine Intelligence Research Unit at Edinburgh University.

tory work, and in particular to end the tyranny of the assembly line.

Advanced technology, while in some respects enhancing man's coping ratio, has progressively eroded it in other respects, in particular by deskilling life inside the factory while adding to its complexity outside. Subdivision of tasks into idiot sub-tasks and their subordination to the assembly line has turned each job into one which can be learned in ten minutes by a moron. Most painful of all, the trained man sees the craft to which he devoted his life "rationalised" out of existence.

Treat a man like a moron and you make a moron. Yet for a steadily growing proportion of the working week, each man so treated is confronted in his off hours with another job which gets harder all the time — the job of everyday life. This is not a job for morons. Here then is the rub.

(To be continued)

Donald Michie

## GREATER MANCHESTER POLICE

Ref No W 000007

The Greater Manchester Police have a computerisation policy extending through the 1980s. Apart from operational systems, it is planned to introduce a number of administrative systems. One of these, due to be commissioned before the end of 1981, is a personnel and civilian personnel system to run out of a dedicated microcomputer on the Greater Manchester County's M25-4341.

Suppliers of a database who have considered the operational aspects of the defence contracts of the type outlined above and who wish to be considered for the personnel system should contact the Chief Constable, Greater Manchester Police, Computer Project Branch, Sedgley Park Training School, Prestwich, Manchester M25 4RT. The deadline for tenders is Friday, February 13th, 1981, with a presentation to this committee on Wednesday, February 18th, 1981.

## CELEBRATING THE 'GOOD OLD DAYS'

### Industry pioneers at reunion

OVER 100 computer pioneers packed the Swan pub off London's Southampton Row last Friday, to recall the "good old days" of the computer industry. The occasion was the tenth annual reunion of former members of De La Rue Bull, one of the first computer companies to be established in this country, and which vanished from the scene in 1964.

The two men who initiated the reunions, Iain Holden and John Brown, were celebrating another event — it was 20 years, almost to the day, since they first joined De La Rue Bull. The company was formed in 1959.

Like others present, Holden and Brown have since gone on to higher things. Holden is now European database manager for Honeywell Controls, while Brown works in a senior capacity for ICL. Other high fliers included John Ockendon, who went on to become head of Scicon, Ian McNaught-Davis, managing director of Comshare, Derek Price, president of Comshare Canada, and Rupert Bayfield, a



Roger Ford (right) celebrated the sale of a Gamma 10. It is 16 years since they were made.

former operator and now a director of the VLI recruitment and software group.

One man with a special cause for celebration was Roger Ford, a former salesman with De La Rue Bull now working for Univac. He was able to announce the sale of a Gamma 10, one of the firm's most successful computers in the early 60s, but rather thin on the ground today.

The machine, which had

outlived its usefulness at a nearby school, is to be acquired by Bradford University's new museum of computing. The sale, dependent on acceptance trials, is expected to cost the university £200 — substantially less than the 1964 price.

Ford's former boss, Ian McNaught-Davis, was quick to step forward with his commission only 10p, but then, he was 16 years behind schedule.

## Local networks for satellite services

DISTRIBUTION of satellite-based data communications services between earth stations and users' equipment is one application for the Net/One local area network that its manufacturer, Ungermann-Bass, is investigating in the US with Comsat General, the satellite operating company.

Comsat's Integrated Design and Manufacturing Systems division is likely to be an OEM customer for Net/One networks for inclusion in its computer-aided design and manufacturing systems. In its test installation, Comsat has a Honeywell 6000, a Hewlett-Packard 3000 and two Digital Equipment VAX-11/780s, one of them running under Unix, linked via a Net/One to a number of VDUs, test equipment and special terminals.

### End of year

The result is that interfaces to a number of widely-used proprietary "standards" including the Digital Equipment Unibus, the IBM 3270 blyne display and 2780 remote job entry terminals and the Hewlett-Packard general purpose interface bus, are to become available towards the end of the year.

Ungermann-Bass is also developing support for virtual circuits and datagrams in line with the Transport Service level, level four, of the International Standards Organisation's seven layer scheme for open systems interconnection.

Higher level protocols, such as for file transfer, are being developed, too, although marketing vice-president Jim Jordan said Ungermann-Bass would implement proposals published under the Ethernet scheme by Intel, Digital Equipment and Xerox.

His company took the view, Jordan said, that everyone should

jump on the Ethernet bandwagon, as that would be the fastest way to bring down the cost of local networking for all, even if it were shown that Ethernet was not the best technical solution.

This would be equally true for the Cambridge Ring or any other design, he added, except that the money being put behind Ethernet by three of the biggest companies in the US was unlikely to be matched.

Should an alternative scheme prove itself in the market, however, Ungermann-Bass would probably make a version of it since it saw itself as a generalised local networking company rather than a single product company.

This is a philosophy echoed in the UK by Orbis of Cambridge, which already makes two local networking systems: an implementation of the Cambridge Ring and Econet, its own slower, cheaper bus-based design.

Jordan confirmed that the Institute of Electrical and Electronic Engineers, a US standards-setting body, had shown reluctance to endorse the Ethernet design automatically and appeared likely to back an alternative design, such as the token-passing ring or, as yet, empty slot principle used in the Cambridge Ring, as well as the carrier-sensing, multiple-access with collision-detection, CSMA/CD, principle used in Ethernet.

Net/One was designed in modules, so that the system could accommodate change in any part. The first systems were shipped before the Ethernet specification was published, so the first changes would be to conform to Ethernet at the cable level, by boosting the data rate from 4Mbps to 10Mbps and enlarging the address information to 48 bits.

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## Modcomp's X25 software

MODCOMP has joined the growing number of computer manufacturers to announce implementation of the three levels of the X25 interface recommendation used in public packet-switched data networks.

The product, a combination of hardware and software to be used with the Classic family, is available from April for \$4,000 per computer.

Univac recently announced

support for both X25 and X21; the interface recommendation for use in circuit-switched data networks, after two years' development and testing on Transpac, the French packet-switched network, and Nordpac, the Scandinavian circuit-switched network.

The Unifone products, based on the DCP400 front end processor and UTS 400 intelligent terminals, are to be introduced over the next two years.

## Logica Polynet for 10 universities

by Donald Kennett  
LOGICA's implementation of the Cambridge Ring local area network scheme, now called Polynet, has been chosen by the Science Research Council for use in its distributed computing programme.

Production is to start this month in Swindon, where Logica VTS makes its word processors, for installation in 10 universities in April.

Chairman Pat Coen said two further organisations had ordered systems and that the Swindon factory had enough production capacity to cater for ten times the likely demand.

The distributed computing programme is one of the major SRC-funded research projects under way in university computer science departments (as distinct from computer service departments).

Coen said Logica had probably won the competitive tender for Cambridge Rings because of the product engineering work it had done on the system in the last two years.

One of the refinements added

during this period which may have proved decisive was the option enabling Polynet to transmit packets either 38 bits long, to be compatible with the early design now being built by others including several universities, or 40 bits long like the later design for which Ferranti is developing two custom chips based on Uncommitted Logic Arrays.

The two extra bits allow packets to be variable in 8-bit increments up to 64 bits in length in future systems, to give the greater effective bandwidth for applications such as interactive graphics and digitised voice messages.

### Choice

Another refinement is the choice of sockets for network nodes. One type allows the ring to have sections inserted or removed for experimentation and must have a shorting plug inserted if no terminal devices are attached; the other version is for permanent wiring into a building which has self-shortening sockets into which devices can be plugged while the net-

work is running. The monitor station has been modified to adjust automatically to the timing changes made when an extra device is plugged in.

Plans for this year include discussions with the SRC, the Department of Industry and another company on submitting proposals for networking standards, as well as discussions with other companies on the production of compatible attachments and packaged systems for complex applications.

The three basic units in Polynet are the monitor station at £2,500, one of which is needed per ring system, the node station with repeater and transceiver at £830, of which up to 254 can be inserted into one ring, and the power supply at £400, one of which is needed every eight repeaters.

Advantages claimed for Cambridge Ring systems, which are based on four-wire twisted-pair telephone cables, over coaxial-based Ethernet systems, are guaranteed bandwidth and rate of delivery, ease of locating faults, ease of installation and far greater maximum length of ring cable.

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## Martian information structures

Figure 2 in the last Privateview contained a few typographical errors. The last three lines in the top section of the table should have read:  
else mnyval(maplist(position, successors, value)) close  
end;  
print(value(inputposition)); goon;

## FOURTEEN YEARS AGO

From Computer Weekly of February 2, 1967

THE first computer to go into operation on the National Computing Centre in 1964, was officially inaugurated at the Centre's new headquarters in Manchester. A system research institute where systems analysts from Europe can study the subject, to advanced post-graduate level, is to be set up by IBM in Geneva. The Bull GE crisis in France worsened when armed security guards held back

over a thousand Bull-GE employees demonstrating outside the Ministry of Labour in Paris, shouting and carrying banners calling for the company to be nationalised. A bleak future is forecast for potential customers of IBM's 360/57 time sharing system. There have been serious delays in delivery of software for the system, and suggestions that the time may be dropped altogether.

# Magazine's cool reaction to '1,000 free pages on Prestel' offer

by Donald Kennett

BRITISH TELECOM has offered 1,000 free pages on Prestel to the magazine Practical Computing for its publication of telecomputing, but the reaction from the magazine has been cool. "We would love to do it and no doubt we would eventually do it anyway," said editor Peter Laurie, "but right now there would be no financial benefit for us, only the hassle of keying in the programs."

He has asked the Department of Industry to fund the inputting function. The DoI is considering it.

The Council for Educational

Technology is about to publish a set of recommendations for standardised formats and procedures for storing and loading telesoftware on videotape systems, following discussions it initiated last September with manufacturers including IBM, Research Machines, Commodore, Tandy and I.T.T.

Mike Brown of CET said that there had been some contention over error control methods, but finally it was agreed to recommend the same parity checking method that is used in Prestel's bulk updating procedure.

CET is now tackling the prob-

lem of finding a cheap enough modern for schools. The target price is under £100, which might be met by bulk ordering from suppliers of proprietary modern boards or television adapters, but none of the products so far on the market can be used without modifications or additions.

Demonstrations of telesoftware on Prestel were first run by CAP in 1978, but no commercial services have yet emerged and most interested parties, including the Prestel organisation, regard telesoftware as important for the long-term rather than the immediate future.

## Computer Sciences back in business with US govt

COMPUTER SCIENCES IN THE US has been allowed to resume bidding for new government contracts despite the legal action against several of its employees for allegedly defrauding the government when selling time sharing services on CSC's Infonet network.

The US government's ruling has been warmly welcomed by CSC which derived 63% of its total business from government contracts in its fiscal year ended March 28, 1980.

The government is charging the CSC employees with deliberately overpricing Infonet services and

time sharing is the one area of new business bidding that remains closed to the company. Infonet brought in more than \$44 million from government business in the last fiscal year, although this sum was still relatively modest compared with the remainder of CSC's government business. It amounted

to a formidable \$243 million and consisted primarily of contract services. The Department of Defence alone accounts for about 40% of CSC's total US government business.

Earlier this month a Federal judge dismissed the most serious charges against the CSC personnel.

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## Typewriter conversion unit

IBM GOLFBALL typewriters can now easily be converted into printers, using an attachment from Data Resources that fits inside the typewriter case with the substantial modification. A set of eight small solenoids act on the clutches inside the typewriter, providing a standard RS 232 interface to a small computer or word processor.

The price of the conversion unit, made by Escon of Santa Barbara, starts at \$420, depending on what interface and options are required. The character set is determined by a replaceable PROM.

All the electronics are in a separate box; the only modification required to the typewriter case is the making of a hole for the cable.

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## Management is vital factor in micros for industry

by Rory Johnston

MANAGEMENT commitment to the importance of new technology is easily the most important factor in introducing microelectronics into industry. That is the finding of the study, just completed, on micros in manufacturing carried out by the Computing Services Association for the Department of Industry.

Visits were made to 120 firms, and the study looked at applications for micros in process control, in products, and in information systems. Project leader Gerald Jones, of John Bell Computer Services, said that average success rates jumped from 40% to 80% when management were clearly committed to the work, and this was the main message of his report to firms thinking of taking up the new technology.

A draft of the report is now being considered by the DoI. The intention is that the final version will be given to all firms that apply for MAP funding from now on, to provide guidelines for their work. Consultants taking part in the MAPCON scheme will also be provided with the report.

Some of the firms studied for the report were small, some large, some experienced, some relative neophytes, but none was a complete newcomer to microelectronics.

The conclusion of the micros project was announced at the CSA quarterly lunch by director-general Doug Eycions, who added that the related Text Processing project, in carrying on its work, was pressing hard to the DoI and

equipment is to be purchased as test centres, key laboratories, and computer centres. The Chinese on their visit will also be meeting UK manufacturers and staff at universities and polytechnics.

CSA director-general Doug Eycions also announced that a trip to Japan is being organised in conjunction with the London Chamber of Commerce. Japanese hardware manufacturers continue to be very interested in UK software.

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## MICRO NEWS

# Now the micro takes over behind the bar in your local pub

AS the Seventies saw the creation of microcomputers, so the Eighties is predicted to be the decade for applying them. The ball has already started rolling with the development of a microcomputer-based bar management system, called Micro-BAR.

Micro-BAR was designed in the UK by Stephen Weich, managing director of Selmicro, based in London.

A company called Micro-BAR UK has been formed specifically to market the system, and to take care of all its associated future developments and extensions.

Weich's aim was to bring the microcomputer to the small businessman in a dedicated manner, so that it would have the least psychological effect and not too many disruptions to the running of the business.

He has succeeded — the system can be operated with the push of a button to obtain a real time status of stock for up to 128 different lines.

Stock data can be accessed by management; the system does not require a bar tender or even a computer person to operate it. Stock control is carried out automatically by an electronic transducer connected to each optic, which passes

information to the 6802-based microcomputer every time a drink is dispensed.

The problem of attaining an electrical signal from an optic whenever a drink is dispensed has been around for some time. Weich claims to be the first to have solved it. His method requires a special encapsulated optic including the standard optic and the electronic monitoring device, which is being made in the UK by Lucas Industries.

Racial Microelectronics Systems, of which Weich is a director, is assembling the system. It consists of two brief-case sized units, one of which is housed in a brief case and called ADAM (auxiliary data access monitor).

Adam contains a keyboard and a thermal printer so that individual lines can be accessed and a printout obtained.

## Winchester disc based system for under £5,000

A WINCHESTER disc based microcomputer system selling for under £5,000 has been developed by South Wales OEM systems company, ComCen Microcomputers. The system runs off a Zilog eight-bit microprocessor, the Z80A, and uses Western Digital's CP/M single-user and MP/M multi-user operating systems.

ComCen was set up by brothers Peter and David Norman, who also run a computer shop called Computer Centre, in Swansea. Now, at the £1 million a year turnover level, the company has organised a systems assembly plant in Swansea occupying 4,000 square feet.

The plant became operational last October and is now producing about five systems a month. The company hopes to double its production by next month.

The 20-megabyte Winchester disc systems are manufactured in the UK by Data Recording Equipment and ComCen has built the controllers. True IBM PC-compatible technology was used in the design of the disc which have a transfer rate of 6.4 megabits per second and an access time of 35 milliseconds.

The major participants in Chaps include the "big four" English clearing banks, Williams and Glyn, the Trustee Savings Bank, the Clydesdale Bank, the Royal Bank of Scotland, as well as the Bank of England and the Giro.

Chaps is the clearing banks sharing machines.

The Chaps steering committee, rather than Logica itself, will retain management control over the whole project.

Chaps users can "shop around" for a clearing bank that offers the best service and it is envisaged that in future users will include a lot of big commercial organisations as well as banks.

A major advantage offered by Chaps to the banking industry is that it will enable transactions of any size to be handled on a same day basis where rapid clearance is needed. With Town Clearing the minimum transaction size is £10,000 because of the costs involved.

Another benefit will be the availability of identical same day clearing facilities to banks and other organisations beyond the confines of the City of London.

The total cost of developing the parts of the Chaps system used by all participants will be about £1 million. In addition, about £1 million is expected to be spent by the major participants on Tandem hardware.

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by Claire Gooding

# Growth area squeezed by the banking system

If you seriously want to get into business as a software house or a micro manufacturer, here are some of the difficulties you may face:

If your company has turnover of £50,000 and you pay yourself a salary of £10,000, here is what could happen: Salary £10,000, PAYE £3,000, NIS £1,000 (you + company). Not to you: £6,500 approx.

Your company makes a profit of £20,000, after your salary and expenses. You have to meet corporation tax of £10,200, tax on dividends of £3,000.

Out of what is left you are meant to provide the finance for your company, the government having taken not 34% of the profits, but 34% of the gross revenue.

There is not enough money to grow bigger, so you will have to borrow. . .

IF YOU GO TO ONE OF THE HIGH STREET BANKS, YOU MAY FIND:

No risk capital; immediate repayments of interest and capital; a second mortgage on your property; loans on short terms of two to five years.

A merchant bank is fundamentally not interested in start-up situations or companies with less than £500,000 turnover.

All those difficulties which are faced, day by day, by people in our industry trying to start up on their own, were brought into the open at the Sunday Times conference.

The UK is moving into the depths of the worst recession since the Thirties. Dole queues have almost reached 2.5 million, and the CBI forecasts this week that a further 500,000 jobs will be lost in the coming months.

However, the computer industry, with one or two notable exceptions, continues to report record profits, both here and in the US.

The number of vacancies in it continues to outstrip the supply of people to fill them.

Yet here in the UK, there are only six companies wholly engaged in computing that are listed on the Stock Exchange.

This tiny presence can be put down to any number of causes, but there were a series of points made at the Sunday Times Banking on Britain conference which appear particularly relevant to the UK financial and computer industry.

The six companies listed on the

Banking on Britain. From the highest level of the banking and government world comes the news that from the tax you will have to pay, to the amount of money you can

borrow, all is about to change.

Computer Weekly associate editor KEVIN CAHILL was at the conference and examines here some of the views presented.



KENNETH BAKER, the Information Technology Minister, who is now a new spirit abroad. Money more readily lent in the City and the clearers.

in public. The following points emerged.

Having had their ritual once back against Lever and Edwards, the clearing banks are moving to develop ways to get more money faster to industry. The loans will be for longer terms and the security demands will be lower.

In the case of the Midland Bank, the general manager indicated that the whole branch structure was being looked at and in some cases reorganised to deal with the problems of small businesses, particularly computer companies.

Information Technology Minister Kenneth Baker said: "I do remember myself how difficult it was to raise money for high technology investment from either the clearers or the merchant banks three or four years ago. But this is now a new spirit abroad. Money is more readily lent in the City and by the clearers."

"It is important for branch managers to keep abreast of the schemes and respond in an encouraging and sympathetic way to enquiries."

But all through the informal discussion which followed the speaker, the same theme emerged. What the banking generals were saying was not, in all cases, reaching the branch network. A range of people with computer backgrounds spoke of ignorance, excessive collateral demands, no viable repayment terms and a general apathy towards small firm propositions. One would-be computer entrepreneur spoke of a branch manager seriously asking him what kind of fibre software was made of.

One bank manager at the conference, with a clutch of high-technology companies on his books, spoke of a branch network without telefax, Prestel or access to computer modelling facilities.

But there is no doubt that the banks are changing. If you are a high technology outfit you will get preferential treatment, decent loans on the right terms and much more venture capital will be available.

The tax system will change to allow small companies to retain more of their profits, and there will be a much more advantageous tax treatment of PAYE employees wishing to offset high technology investments against tax.

In 1969 Greyhound changed IBM with trying to monopolise the leasing business with tactics like manipulating its own purchase and lease prices.

Greyhound has now withdrawn its charges "with prejudice" meaning that it can never reopen the case.

With Greyhound off its back IBM has now only to deal with pending appeals from three other private anti-trust litigants: Memorex, Forre and another leasing firm, Transamerica.

Meanwhile, the US government's anti-trust action against IBM is expected to reach the next stage early this year.

where more than 85% of homes have no directly connected sewage. But the price of this good housing stock is being felt most sharply by those with good homes and no jobs.

If ICL had been able to borrow on the same basis as the average homeowner, i.e. two and a half times gross income, we would have a computer giant with over £1.7 billion in funds, lent on a relaxed 20 to 25 year repayment term. Instead we have a computer pygmy struggling to survive on total loans (banks and shareholders) of a puny £226 million.

Lever and Edwards classed all non-investment expenditure as consumption. On that basis they made the following five points:

1. A much greater proportion of national product must be reinvested.

2. British industry has to raise most of its investment capital from its own (highly taxed) profits. In Japan major finance comes from outside the company, and German entrepreneurs can raise three times as much money from the banks as the British.

3. Britain's banks lend comparatively little to industry.

4. Japan's industrialists have really long-term loans of 15 to 20 years. In Britain the formal term averages 2½ years.

5. In Japan the debt equity ratio is 85. In Britain it is 22. (The debt equity ratio is the amount of money per £100 that a company must find outside its own resources.)

In the second article Lever and Edwards argued for a series of changes in the proportion of money being channelled from the three great fund-raising agencies - the insurance and pension funds, the banks, and the building societies - to industry.

The reaction

Following the publication of the articles, there was an unprecedented reaction from the public.

The banks, in the form of NatWest chairman Robin Leigh-Pemberton, leapt into print. He attacked the Lever-Edwards statistics on the ground that they were ten years out of date, rather than dealing with the principles raised, and with glorious injustices, alleged that no industrialist who was a customer of the National Westminster Bank had ever complained to him of being refused a loan which, in the customer's view, was affordable.

The following Sunday the Sunday Times carried a series of letters from NatWest customers, flatly contradicting Leigh-Pemberton. So vociferous was the criticism that the Sunday Times fixed up the conference to allow the protagonists to debate their differences.

A PRIVATE anti-trust suit against IBM which has been as protracted as the government's marathon case has been settled out of court, with IBM paying Greyhound Computer Corp \$17.7 million.

The leasing subsidiary of the famous bus company first filed its suit in October 1969, demanding \$100 million damages, a figure that could have crippled it if Greyhound had ended up the outright winner.

A joint statement from IBM and Greyhound said that the case, due to start on January 26, would have lasted several months and involved substantial expenses on both sides. The \$17.7 million paid to Greyhound will cover part of the ex-

penses it has incurred to date.

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## SOFTWARE FILE

### Boeing homes in on scientific market . . .

US time sharing bureau Boeing has hived off its ICL bureau and software marketing arm in the UK, and is now concentrating on winning more customers for its US-based scientific and engineering service through a new subsidiary, Boeing Computer Services (Europe).

Peter Hooper, former managing director of the UK branch, bought out the part of the business which was based on the Capital Cities ICL bureau acquired by Boeing five years ago, and also the specialised airline software, and the Prime interactive business system.

"There hasn't been any bad feeling about this deal," stressed Boeing's new managing director, George McLeod, "This is Hooper's opportunity to do his own thing with the part of the business he knows best, while we can concentrate on what we feel comfortable with."

The new Boeing subsidiary intends to increase its share of the scientific time sharing market by taking advantage of the lower cost of such computing in the US.

"We can sell at US prices," said McLeod. "Engineering computing there costs about half what people pay here and as they're eight hours away in time, it means we get night shift rates as well."

"Times are hard and it means that companies aren't growing as fast, so they are looking around to do the same amount of computing but more efficiently - they have to contain costs. They could have done it before if they'd had to; it's just that they'd never had to."

Boeing, subsidiary of the aircraft manufacturers, employs over 5,000 worldwide, and runs one Cray machine, four IBM 3031s, eight Cybers and one of the world's largest CDC installations. The Mainstream time sharing service concentrates on financial planning and engineering/scientific computing, where the information content of data is high enough to demand machine power on a grand scale.

At the moment Boeing has UK centres in Watford, London, a new centre in Coventry, and it is likely that there will be premises in Europe to cater for new users there.

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### Know-how added to German logic

"LIKE nothing you've ever heard before" say the adverts for CPG, a teleprocessing language which is promising its US users that it turns batch programmers into TP programmers overnight.

CPG (sold in the US as CPG . . . The language) is being pushed hard in the US by Insac, and is about to be launched over here by Altergo. Like most Altergo products it is aimed at the IBM market, with the stress in productivity and performance.

"Effectively, it saves you one programmer a year," said Calvin King, who is marketing CPG in the UK for Altergo. "There are also benefits in increased programmer productivity, high system performance and a reduction in training."

Altergo came across CPG three or four years ago when selling its TP monitor Shadow II to a German customer, Renker Daten KG, paper specialist subsidiary of Rotring. The firm had written the language for its own use after discovering that its IBM 370/125 "died" when programmers tried to write TP applications in Cobol.

Unable to find people to write in Assembler, Renker created CPG to

generate programs in Assembler from high-level instructions.

"It is knowledge of what goes on in the machine combined with straightforward German logic," commented King.

Altergo snapped up the product and has been grooming it for commercial consumption in the last two years. King himself was involved in writing the Shadow/CPG interface, which enables users to keep the same program

code should they wish to switch from CICS to Shadow.

He moved from the back room to the sharp end of marketing partly because of his faith in the product, and identifies several targets for CPG. "It's basically aimed at people who are short of TP programming resources," he explained.

"One significant market we've identified is System 3 to 4300 conversion, but it's not the only

one and eventually we hope to crack the G-bol market.

"Cobol programmers don't like the threat of being 'deskilled'; they tend to say 'the kind of things we need to do can only be done in Cobol', but in fact once we've overcome that attitude they find CPG does it more efficiently."

The price of CPG is in the region of £10,000, and includes manuals, support, and one year's maintenance.

Line number	Indicator	operation code	comment	bytes stored
370 C	AA1	TAG	TAG AA1	000000
380 C		EREADSCREEN	G1	000012
390 C		EREADSCREEN	02	000012
400 C	NP1	GOTO AA1	GOTO AA1	000012
410 C		AFQOTARR	AVR	000012
420 C		Z-ADDD	1	000012
430 C	LOUP	TAG	TAG LOUP	000000
440 C		ADD 1	1	000000
450 C	ARR+1	SUB AVR	ARR+1	000000
460 C		CMP 12	1011	000012
470 C	13	GOTO LOOP	GOTO LOOP	000012
480 C		EREADSCREEN	02	000012
490 C		SETOF	11	000000
500 C		GOTO AA1	GOTO AA1	000000

A typical CPG logic spec, for reading an array from a screen. The spec type, C, here indicates a calculation.

# Next week is INFO WEEK '81

Britain's biggest ever Information Technology Show is at the Cunard International Hotel, Hammersmith, London, next week from Tuesday 10th to Friday 13th February, open each day from 10 a.m. to 6 p.m. (Friday 4 p.m.)

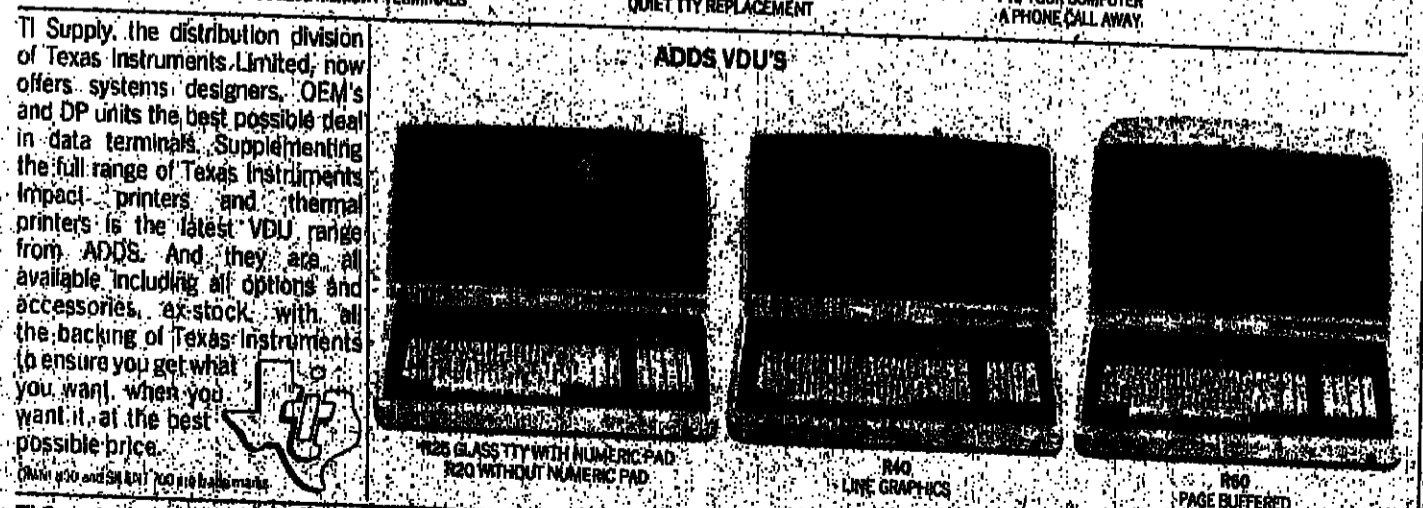
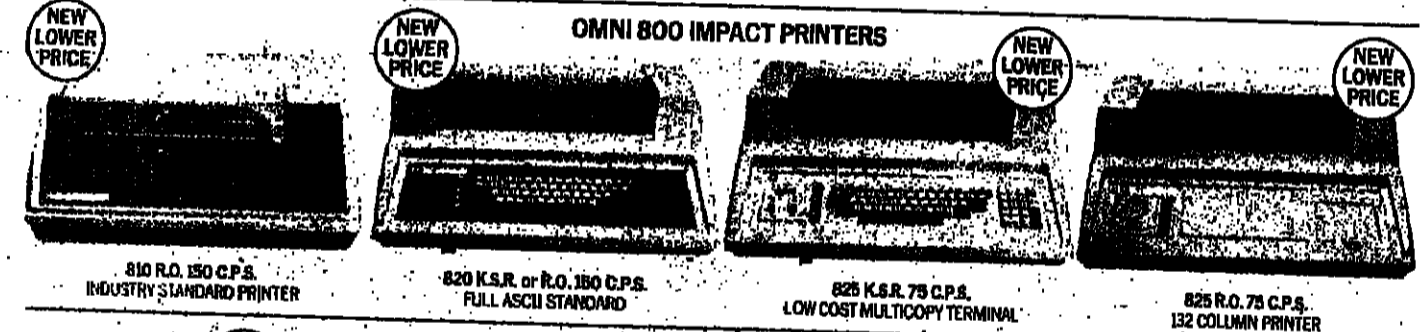
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### Settled out of court

by Keith Jones

A PRIVATE anti-trust suit against IBM which has been as protracted as the government's marathon case has been settled out of court, with IBM paying Greyhound Computer Corp \$17.7 million.

The leasing subsidiary of the famous bus company first filed its suit in October 1969, demanding \$100 million damages, a figure that could have crippled it if Greyhound had ended up the outright winner.

A joint statement from IBM and Greyhound said that the case, due to start on January 26, would have lasted several months and involved substantial expenses on both sides. The \$17.7 million paid to Greyhound will cover part of the ex-

penses it has incurred to date.

In 1969 Greyhound changed IBM with trying to monopolise the leasing business with tactics like manipulating its own purchase and lease prices.

Greyhound has now withdrawn its charges "with prejudice" meaning that it can never reopen the case.


With Greyhound off its back IBM has now only to deal with pending appeals from three other private anti-trust litigants: Memorex, Forre and another leasing firm, Transamerica.

Meanwhile, the US government's anti-trust action against IBM is expected to reach the next stage early this year.

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## by Paul Fisher

# Hint of tax boost for investors



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DOI: 10.1177/0095687405278006  
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# PROGRAMMERS' PAGE

## Job market 'as dead as a Dodo'

ANYONE can see that the job market is in the doldrums at the moment, even in computing. The classified ads are a fraction of what they were, redundancies are announced almost daily, and letters like J. M. Perry's on this page are getting more and more common.

But what of the established consultancy and contract houses? How slump is the pinch for them? I approached Harrison's Computer Services, which has four branches in London, East Anglia, Devon, and Ireland. A fifth is planned but the location has yet to be decided.

**Laid off**

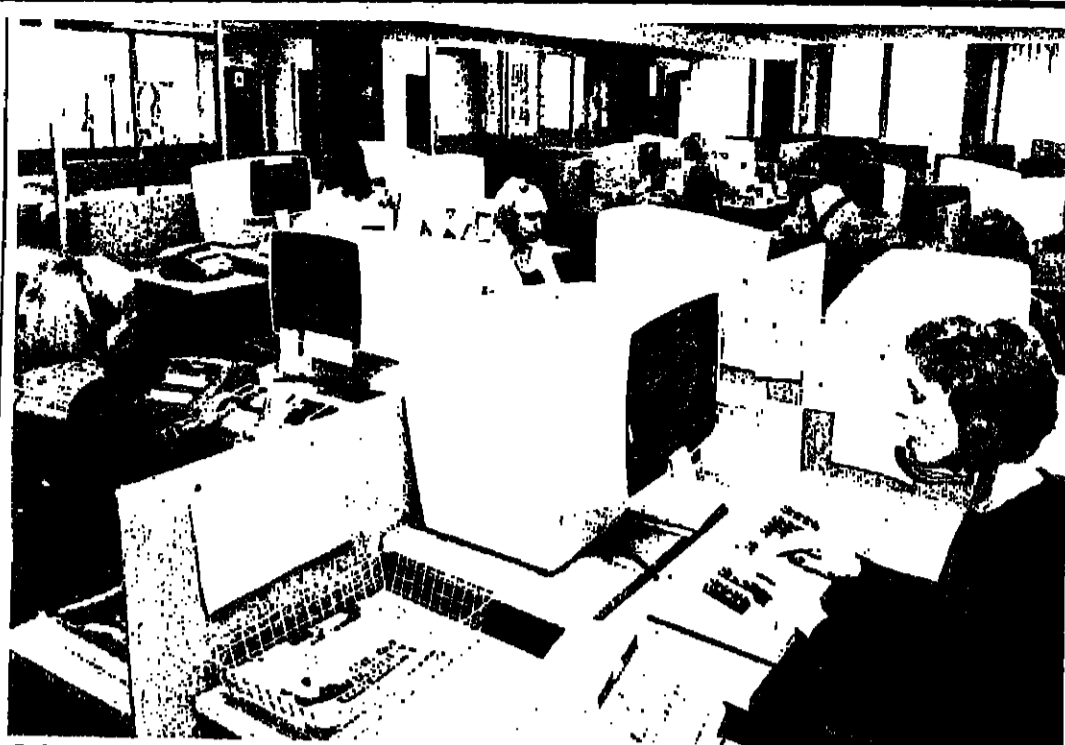
Richard Mead, one of the directors, and managing director of the Eastern branch, confirmed everybody's guess. "The market is as dead as a dodo. In my job I have a lot of contact with DP departments from a whole range of companies and the difference from just a year ago is staggering. Projects scheduled for the next few months have been indefinitely postponed, or cancelled outright. Staff are being laid off, in some cases whole DP departments are closing down, and I know personally of four organisations in the last month where the computer managers were asking about jobs with us."

I remarked that he would have no problems in finding staff - at least he'd be well supplied with DP managers.

"Absolutely. In fact we always get a very large response to our advertisements from all over the country, the North and Midlands included."

**Expanded**

He hurried on to explain some of the background to Harrison's. "We're in a fairly fortunate position. Thanks to some quite large projects we acquired at the end of last year we have actually expanded in the last few months -



Order Line, the telephone enquiry system set up by Freemans Mail Order, allows agents to check the availability of catalogue items by telephoning an operator seated at a VDU. Orders can be amended or reserved on the spot.

## How do I break into the 'closed shop' of computing?

I WONDER if you can help me. I am a mathematics teacher, with a degree in mathematics, and am currently teaching in a secondary school.

For some time I have been considering leaving teaching and seeking employment in computing. I am particularly interested in training to be a systems analyst or analyst/programmer. However, when I read through the appointments section of your paper the majority of advertisements contain the magical phrase

## Here are my five ideas . . .

**Pamela Rowe replies:**

I HAVE been asked this question before, and there isn't an easy answer. Only a couple of years ago any graduate, and particularly one with a maths degree, was fairly well sought after to train in programming. Recession has changed all that. Now there are experienced programmers going spare, or if a company is really committed to training, there are plenty of unemployed computer science graduates about, who have a three-year headstart in the basics and have almost certainly done some programming.

**Luck**

2. Write to all the companies within reach that employ com-

by Pamela Rowe

## Catalogue shopping by computer

ARE you up to the proverbial mauls with shopping? All that pre-Christmas trudging about weighed down on one side by enough brussels and spuds to feed an army, and on the other by a 10-lb turkey representing your Christmas Day entertainment - verily the modern beast of burden is woman. And this was followed by the slings and arrows of outrageous January sales to save pounds off that sheet you've been putting off buying for months.

If now you feel you can never look another shopping trolley in the face, sit back, sip your coffee, and let your fingers do your walking for you. Not through the unrelieved sobriety of the Yellow Pages, but via the glossy colour pictures of a mail-order catalogue.

### Order Line

While there is nothing new about catalogue shopping, Freemans Mail Order of London has smoothed out and speeded up the whole business by incorporating a telephone line and interactive computer into the system.

Called Order Line, the process starts in the conventional way with an agent taking details of a customer's order. The agent-person can then ring a relatively local number and speak directly to an operator seated at a VDU, who will check the availability of any of the 20,000 items on offer in the catalogue, and, hopefully, reserve the order.

If the particular item, colour or size is out of stock, a second choice can be made, or the whole order amended on the spot, avoiding the sometimes lengthy, or even abortive, to-and-fro of the postal service.

### Nationwide

Bob Shemmings, a director of Freemans, told me that by August 10 Order Line would be nationwide, and employ 100 terminals operated from five computer centres.

The fourth centre has just opened, linking up parts of East Anglia, and the West Country and South Wales are to be included in a month or two.

At present agents with London, Birmingham, Sheffield, Manchester, Peterborough and St Helens phone numbers can use the service.

Order Line is based on the IBM 4300 range of hardware. Both the 4331 and 4341 are based centrally and linked to the 100 model 3881 terminals.

### Puzzler

CHESS and its 8 x 8 grid, has always been a fruitful source of ideas for the puzzle composer. On the assumption that virtually every reader of this column will be familiar with the 'moves' of the various pieces, I will henceforth from time to time include a problem, which involves just the geometric possibilities, with no specific requirement regarding actual playing ability on the solver's part.

Here is the first of these items: Place just the 16 White men on the board, in legal positions (no Pawns on the first or eighth ranks), so that none of them can move.

See page 37 for solution.

## PEOPLE and EVENTS

### Marconi names managing director

MANAGING director of Marconi Space and Defence Systems Arthur Walsh has been promoted to managing director of The Marconi Company. He is being replaced by Dr Ian MacBean, former assistant managing director of Space and Defence.

Walsh was in the Army for three years, before reading natural science at Selwyn College, Cambridge. In 1951 he joined the GEC laboratories at Stanmore in the Radar Microwave group. He became group leader in 1956 and was promoted to divisional leader in 1962. Two years later he became assistant manager of the Applied Electronics laboratories at Stanmore. In May 1970, Walsh was made managing director of Marconi Space and Defence Systems where he was responsible for several of the company's high technology projects including those relating to torpedoes, guided missiles and communication and scientific satellite programmes.

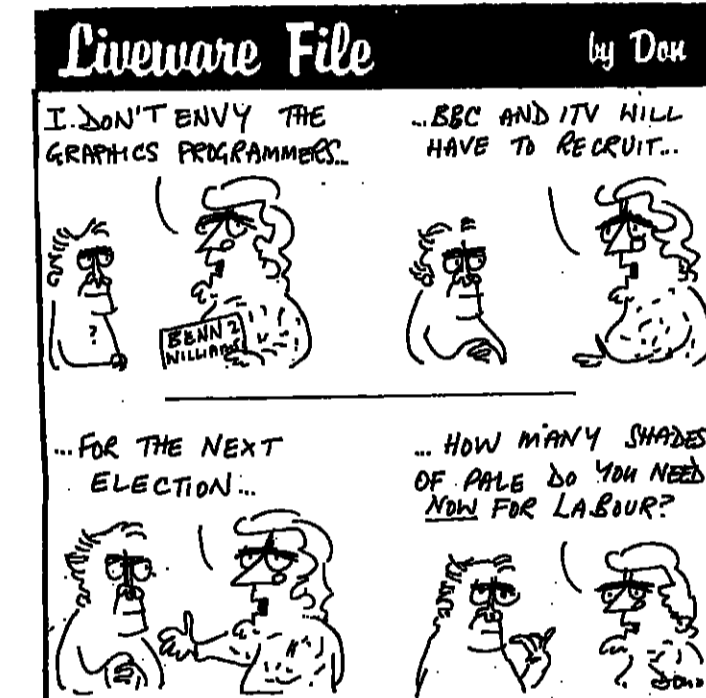
Walsh's responsibilities now extend to several Marconi groups: Marconi Communications; Marconi Radar Systems; Marconi Space and Defence Systems; Marconi Electronic Devices and McMichael Limited.

Chairmanship of the Marconi Company has recently been assumed by Sir Robert Telford, director of GEC and managing director of GEC-Marconi.

### Logabax appoints president

JACQUES DUMAS, until now president of Sperry Univac France, has been appointed president and general manager of Logabax, France's leading computer peripherals firm, which was the subject of a £24 million rescue operation in December.

Logabax's general manager, M. Tal-



### DIARY

**FEBRUARY 9**  
Electricity, computers and music. BCS Bedfordshire branch. Great Mole, Luton. 7.30.

**FEBRUARY 10**  
The Electronic Office. BCS Merseyside branch. Faculty of Science Lecture Theatre, Liverpool University. 6.00.

Planned maintenance of factory plant. BCS Birmingham branch. Wheatfield Hotel, Coventry Road, Sheldon. 6.30.

Computers and the public library. BCS Croydon branch. Maple Room, Fairfield Hall, Croydon. 7.15.

Visit to Robinson's Brewery. BCS Manchester branch. Unicorn Brewery, Lower Hillgate, Stockport. 6.15. Apply to A. Park on (061) 872 2494.

Visit to British Rail Technical Centre. Derby. BCS Process Control Group. Numbers limited, so apply to Peter Andow, Chemical Engineering Dept., Loughborough University, Loughborough, Leicestershire.

Microprocessors - the State of the Art. IDPM: Hull branch. Hull Great Hotel, Ferryhill Road, North Ferry, North Humberside. 7.15.

Will tomorrow's office be an office? BCS Reading branch. Small Physics Lecture Theatre, J1 Thompson Building, Whiteknights, Shinfield Road, Reading. 6.00.

**FEBRUARY 11**  
The Gray system. BCS Bristol branch. St Vincent Rocks Hotel, Clifton. 7.15.

Operation and operation of a DP area. BCS Hampshire branch. Portsmouth Polytechnic, Portsmouth. 8.00.

The office of the future 2. Beyond word processing. BCS Kingston-upon-Thames branch. Room 140 Kingston Polytechnic, Penryn Road, Kingston. 7.30.

Computers in banking. BCS New-



EACH year, Honeywell runs a scheme to encourage operational improvement suggestions. Accepted ideas are rewarded with a weekend holiday break or an evening out at the theatre, plus dinner for two. This year there were 81 entries, eight of which turned out to be usable suggestions. The winners are pictured above with Honeywell directors. From left to right: Bob Smith, Bob Hall (director, finance and administration), Dave Forrest, Margaret Wilkinson, Ken Burnett, Brian Long (managing director), Mike Milhalovic, Alan Back, David Youens (personnel director), Ken Thorman and Robin Lock.

### CMG joint MD

TERRY JOINT has returned to the UK to take up the position of joint managing director of CMG (City of London).

He joined the company in 1969, and soon afterwards went to work in Holland. He was appointed associate director in 1972 and managing director at one of the company's Dutch subsidiaries in 1973. He moved to Frankfurt a year later to become managing director of what was then CMG's new German subsidiary.

### Lamsac official dies

ONE of Lamsac's Local Authorities Management Services and Computer Committee's longest serving officers, Peter Sanderson, has died at the age of 51.

He graduated from Hertford College, Oxford in 1961, and began his career in computing with Unisac and NCR, working in customer training and systems engineering for clients in manufacturing companies. He also set up the training and education section of the London University Computing Service.

Following a period as senior lecturer in computing at South Thames College and a short period as lecturer for the University of Southampton, he joined Lamsac as a computer advisory officer in 1970, covering a variety of duties from cost accounting to computer-aided design, and advising on procurement, staffing, organisation and feasibility.

### OEM director promoted

FORMER director of Logabax (IBM activities), Paul Bion has been promoted to managing director. He has been with the company for six years, having spent most of his career with NCR, Unisac and the Bank Organisation in a variety of sales and management positions.

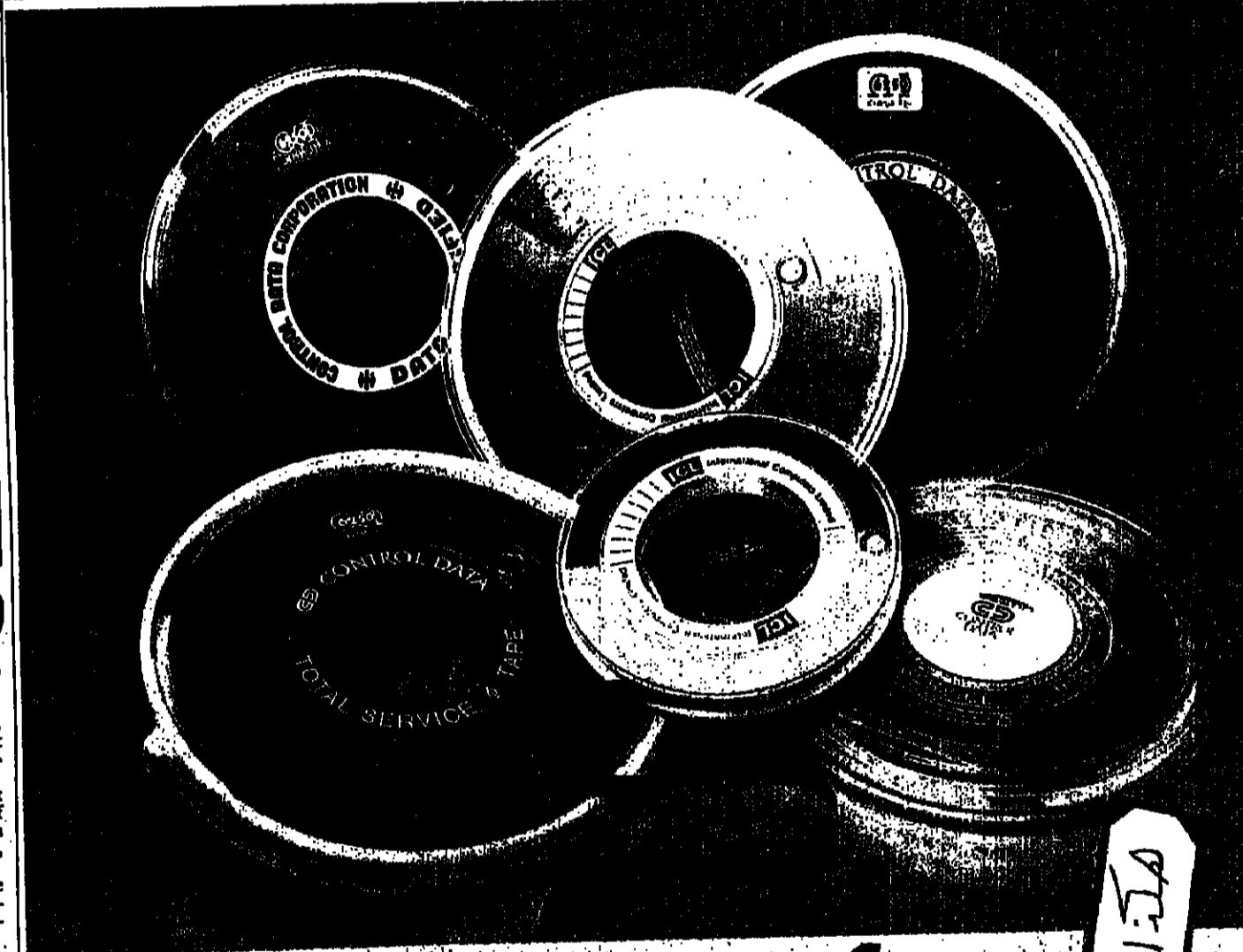
Graham Kemp has been appointed to the new post of sales and marketing director at Marcon Computer Services. He joins the company from PRC, where he was European marketing manager. He has also worked for Unidata and Honeywell.

Cyril Teed has left his post as marketing director of Marcon Communications Systems to join Plessey Defence Systems. He has been appointed to the new position of marketing director at the company's headquarters in Dorset.



Thomas Hartman has been appointed vice-president and controller at Informatics Inc. He was formerly assistant controller with the company.

Colin Croft has joined AB Dick as national sales manager, information systems.



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<b>LEAR SIEGLER ADM-31</b> Two page display with full editing capabilities and four visual attributes	From £739
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At IBM, the passing of the year brought with it the changing of the guard, as Frank Cary stepped down as the company's chief executive officer. Taking his place is John R. Opel, IBM's president since 1974. Many observers and analysts

of the world's biggest computer company believe that the 1980s will be a decisive decade for IBM. While Cary has set the stage for several crucial changes, it remains for Opel to ensure that these changes take place.

# The changing of the guard at IBM....

SINCE Frank Cary took over as IBM's chairman of the board and chief executive officer in January 1973, the worldwide computer and communications scene has changed drastically. These were years of significant developments in the semiconductor business as well as years in which IBM faced, for the first time, tough competition from the likes of Amdahl, National Semiconductor and Storage Technology.

Both Cary and his successor as chief executive, John Opel, worked their way up the IBM hierarchy through the company's Data Processing Division (DPD).

## Timing

Cary has been with IBM since 1948, when he joined the company as a marketing representative in the Los Angeles DPD office.

He became a member of the board of directors in 1968, IBM president in 1971, and chairman of the board and chief executive officer in 1973. Last December, he turned 60 and relinquished his position as chief executive officer.

## by Peter Krass

Cary will retain his chairmanship of the IBM board, with his seat as head of the IBM Corporate Office, which represents corporate management to all of IBM's operating divisions.

The timing of Cary's retirement is due to IBM's attitude of encouraging executives (even the chief executive officer) to retire at 60. It follows that Opel will hold the top spot for five years at most. He will turn 60 in January 1986.

Opel began his career with IBM in 1949 as a sales representative in Jackson City, Missouri, and has been with the company ever since. In 1972 he was elected to the IBM board of directors. Two years later, in 1974, Opel became president of IBM, as well as a member of the Corporate Office. He was elected to his new position as chief executive officer last March. His new title went into effect on January 1, 1981.

Under Cary, IBM brought forward several new and different products and explored new markets and marketing techniques. General Systems Division (GSD) and Office Products Division (OPD) opened retail outlets during the late 1970s. And in the area of large mainframes and peripherals, IBM became a truly aggressive force, responding to the rise of its competitors by the compatible machine makers.

OPD, during the Cary years, introduced a series of electronic typewriters, the 30, 50 and 75, that bridged the gap between electronic typewriters and full-blown word processors. The machines, introduced in May 1978 (the 50 and 75) and in October 1979 (the 30), incorporated varying amounts of

memory and text-editing ability. In 1980, OPD introduced the word-driven word processing system.

Although some observers felt that the Displaywriter announcement was IBM's way of playing catch-up with the rest of the industry, at least in terms of technology, its competitors responded nervously to the announcement with price cuts on their other lines.

GSD introduced two key products during Cary's reign, both of which struck out in new directions — and both of which have been relative failures so far. One was a small database machine, the S/38, announced in October, 1978, and first shipped in June 1980. The other was a minicomputer, the Series/1, which IBM announced in November, 1976, and began shipping two weeks later.

Many computer industry observers believe that IBM's slow start with these products will not mean that its future in these areas is bleak. During the 1980's, IBM's S/38 and its mini business, they say, are both likely to become strong influences on the data processing industry. And GSD's small business systems, such as the S/32 and S/34, did very well, being closer to what IBM's customers were used to getting from the manufacturer.

IBM's biggest division, DPD, had a straightforward task under Cary: to beat its imitators. As Sanford J. Garrett, computer stock analyst for New York brokerage Paine Webber Mitchell Hutchins, puts it, "The further evolution of the microprocessor broke down the entry barriers. The result was unprecedented competition" — specifically from companies including Amdahl, Hitachi, Magnuson and National Semiconductor. Many of these companies were able to market superior machines at lower prices. And if they didn't, they couldn't compete at all.

## Clobbered

In the mainframe business, IBM was its own most serious competitor until the last few years of the 1970s. Prior to that, used IBM computers in the hands of leasing companies and computer dealers were often better value than new machines from IBM. And they came with familiar IBM support.

In 1979, that ended. IBM announced the 4300, setting a markedly lower price-performance ratio for small mainframes. Users and other vendors assumed that all forthcoming computers from the company would meet or exceed these machines' efficiency. This hasn't yet happened, but all of IBM's older model mainframes got clobbered on the used market. Realization that IBM's strategy at the high end differs from that at the low end came too late. The leasing vendors, both of which had a much less stable situation. And IBM's rivals in the now-compatible computer game are now forced to catch up to IBM's pricing. The old customer loyalty. And office machines lost their base to competitors just their base to IBM. History has shown that base cannot be recovered.

IBM was also able to hold the line in the disc market. Although three competitors, Storage Technology, Control Data and Memorex, were able to challenge IBM in this area, IBM's recently announced thin-film head disc has thrown them off a bit. The development costs associated with the new discs have proved to be large. The competitors are now struggling to match the new IBM products — and to do so in a timely fashion.

The race will be tough. Should the pace of the new disc installations greatly exceed that implied by IBM's initial delivery schedules, the competitors will be in trouble. If IBM falls behind its promised pace, the outcome favours the PCs. And if IBM sticks to its plans, it appears that the competitors, at least the leaders, will survive.

Another crucial move was DPD's introduction of the 3081, presumably the first of the 3081 series. Some industry analysts, such as those at Advanced Computer Techniques in New York, add

that IBM will unveil two additional lines during the 1980s, the Sierra and the Olympic series. These will be machines that may replace current IBM lines and that, in terms of processor speed and power, may go beyond today's range.

During the Cary years, DPD also discovered that frequent changes in mainframe purchase prices can keep the competition off-guard. For example, prices on the 3033 were cut three times during 1980. When IBM cuts prices, the others must follow suit. And because IBM has a lot more money to play with, it can better sustain any resulting deflation of profit.

Another important move was IBM's partnership, along with Aetna Life & Casualty and Comsat, in Satellite Business Systems (SBS), a high-speed data communications service company. SBS launched its first of three satellites in mid-November 1980.

Several of IBM's professional spectators, the bulls and bears of Wall Street and the self-

proclaimed industry gurus, believe that Cary's most significant accomplishment was to set the stage for IBM's entry into the Eighties, of ten at the expense of short-term growth for the company. For one, that meant clearing up at least some aspects of IBM's dispute with the US Justice Department and lawsuits from competing companies. These legal hassles had a detrimental effect on the company's work.

Harry Edelson, head of Wall Street firm Edelson Technology Associates, says, "Cary's best accomplishment was getting into new businesses, such as telecommunications, minicomputers and word processing. He made short term sacrifices in growth with hope for higher growth in the future."

Others, such as Robert Fertig, of Advanced Computer Techniques, says that although Cary cleared up a lot of IBM's legal problems, the company did experience "a lot of stumbles" during his reign. Specifically, Fertig points to the relative failure of the

8100, the S/38, the 4300 (which, he says, was underpriced) and the Series/1. And during the past five years, the company's growth rate has dropped below 15 per cent annually.

"The question is, can Opel get back up?" Fertig asks.

Most observers concede that as IBM's new chief executive, Opel will have his hands full.

John Grey, president of Technetronic Inc., an Ontario-based consultancy, says, "You're going to see IBM regain its presence under Opel. The company will try to surround its four grey walls with excitement; it will become more speculative."

Grey points out that IBM's users are unhappy with the company's take-it-or-leave-it attitude.

"IBM has to become more active. The market is more sophisticated; IBM may have to specialise in order to sell to specialised markets. If it doesn't, it will lose business to hungrier, leaner, more responsive competitors."

Frank Cary (left) and his successor as IBM's chief executive officer, John Opel.

# 3081 leaves some key questions unanswered

WHEN IBM announced the model 3081 central processing complex last December, the first reaction of industry observers was that many rumours would be laid to rest. These rumours centred on a widespread belief that IBM was going to produce a range of very powerful computers, the so-called H-series for the 1980's.

But now that the dust has settled on the 3081's unveiling, it seems that rumours are again circulating. The machine — at least the 3081, as initially announced — has left some key questions about IBM's strategy unanswered.

One of the more interesting commentators on IBM's strategy is Paul Raynauld, vice-president of Computer Financial, a New Jersey lessor and a purveyor of computer real-estate forecasts. In an interview Raynauld said that IBM's numbering of the new machine may be a hint at the company's future plans for the unit.

## Precedent

According to Raynauld, the 3081 designation is likely to make users feel that IBM's other large systems, the 303X series, will be around for a while. But the last two digits of the new computer's number, the "81", makes some think that it is part of the new series of systems announced in January 1979. That series includes models 4331 and 4341. It could, in future, include models 4351, 4361, 4371 and 4381. The last model might, in fact, be the 3081 running in its native mode, according to Raynauld.

He cites the transition machine at the high end of both 360 and 370 series, the model 195, as precedent for a computer getting a new number from IBM.

Along these lines, Wall Street expects IBM to make some kind of move in the mainframe field in the summer, perhaps in June.

The idea that the 3081 has a native mode of operation that would make it different — and faster — than the 370-like system that was announced, is based on a similar design in the

4300 line. IBM's smaller mainframes can be have much like their predecessors, the 370 series, or they can act in a similar fashion peculiar to themselves. This other way of processing instructions, the so-called native mode, makes 4300 series machines more powerful. The user of such a machine may have to pay a price in terms of learning to use the different features and, in some cases, in terms of a reorganisation of programs running on the computers. But IBM has made the native mode efficient enough, in its view, to pay off for the user once the transition has been accomplished.

A similar strategy on the 3081 (or 4381) would not be unthinkable. Should that occur, IBM would most likely introduce new features and perhaps even a new operating system that would enable users to get a lot more work out of the new large mainframe in power and, possibly, fees to IBM for vendor-supplied features.

Some users may soon learn about any enhancements coming on the 3081 first-hand. Beginning in late March, according to various industry sources, IBM will begin shipping 3081 machines to selected users under its so-called Beta Test program. Between then and the October date on which computers will officially be delivered to customers, IBM is expected to ship as many as 75 of the large computers.

The Beta test sites are not to be confined to the US. Rather, IBM wants customers around the world to get a chance to use the new computer and report their experiences to the manufacturer before the official shipments begin. Further, IBM will want to gain experience with its new chip packaging technology. It is unlikely that chip packaging can be repaired in the field. If a 3081 breaks down, IBM will probably exchange a multi-chip carrier (MCC) at the user's site and repair the old component at special facilities, replacing the chips would be available.

In the meantime, IBM is believed to be selling off the base of 303X computers it has

leased to users. The pricing changes of the past few months have led to an interest on the part of users renting from IBM to refinance their computers via independent leasing companies. These lessors can offer more favourable monthly rates than IBM, but they typically require a commitment from the user for three years or longer. The result of the refinancing is, for IBM, an increase in the sales of systems as opposed to rentals; it is also bringing a windfall to leasing companies.

When IBM announces its shipment schedule for the 3081 this pattern of IBM leases to third-party lease conversions may change. If 3081 machines are available promptly, users may choose to stay with IBM leases that offer, in return for higher rates, an option to return the computers earlier than the four-year nominal lease term. Even the penalty charged by IBM added to the vendors financing plan may be the least expensive route for a user that needs a 3033 now but expects to get a 3081 in the near future.

What impact, if any, the rumored changes in the 3081 might have on software-compatible vendors like Amdahl Corp and National Semiconductor are not yet apparent. It is possible that the differences between 370 mode and native mode on the 3081 machine will not be so dramatic that the makers of compatible systems are hurt badly. Amdahl, at least, has the freedom to improve its new 580 series, also called Oslo, by altering microcode.

And even if IBM announces a native mode on the 3081 in June, the switch to that way of using the computer by users might not occur immediately. At large shops, where the balancing of loads on large computers is almost an art form, fundamental changes in the way computers work make for serious operational difficulties at first.

To make the transition easier, IBM might have to support 3081 configurations in which one of the two main processors runs in 370 mode while the other runs in native mode. This is beyond the capability of any IBM operating system software yet announced.

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- Texas Instruments 820 R/O
- Texas Instruments 820 KSR
- Diablo 1650 R/O
- Diablo 1650 KSR
- Hewlett-Packard 2645A
- Texas Instruments 745 Portable
- Texas Instruments 743
- Teletype 43
- Digital Equipment LA34 DECwriter IV

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# Process control trend to the distributed method

GROWING numbers of applications are being reported for computers in what are called the processing industries, a rather vague term covering chemical, and allied physical, activities such as distillation.

For instance, when chemicals are being made in batches — in contrast to the continuous flow processes characteristic of the big refineries — computers are found to show great advantages in controlling plant in which many different products are made at different times.

Compared with other electronic and electromechanical devices for automatic control, computers also offer flexibility for changing process conditions quickly and simply, while keeping batch records, monitoring both directly measured parameters and also those needing calculation such as the yield or the heat transfer coefficient.

IN December, 1980 the North-Western branch of the Institution of Chemical Engineers held a symposium entitled **Making Computer Control Work in the Process Industries**. DR ISRAEL BERKOVITCH attended the symposium, held in Manchester, and reports on it for *Computer Weekly*.

Dr Berkovitch is a consultant in chemical technology and editor of *SCITECH*, the science magazine input to *Prestel*.

The most important attribute of computer control applied to batch processes, as seen by those operat-

ing such plants, is the fact that the user can write and later modify his own control program. This can then be operated to give consistent product quality, whereas with manual control, different teams of operators varying slightly in their practices may produce differing results.

Brian Steel of ICI's Mond division comments that experience of several projects applying control of batch processes by mini- and microcomputers indicates that it is feasible to train in-house engineers, process managers and technicians in computer techniques so that specialist staff do not need to be brought in. But of course a sprinkling of computer experts readily on call is desirable.

Sequence control programs are tested by using a plant simulator — consisting of "a manually driven box with manual switches to simulate input conditions, lamps to simulate output actions, and

timers and potentiometers to simulate continuous measurement" — and then by running the plant in water trials for safety.

The advantages have been confirmed by Alan Birkett of ICI's pharmaceuticals division. Although he describes himself as a non-computer specialist, Birkett reports designs for cost-effective computer control of multi-product

batch plants. Attitudes have evolved on these plants partly as a result of experience and also because of changes in the relative costs of hardware and software.

A plant designed in 1976 was controlled by one system (Digital Equipment PDP-11/35) in a remote control room with a stand-by system ready to take over plant control and a background system to collect data and prepare software. Though this method is successful there were important problems, notably in developing the system software and in the effort required to achieve the final result.

As a result, a second plant consisting of a single multi-purpose unit will be controlled by a DEC PDP-11/23 with 128K 16-bit

random access devices and higher-level languages allowing programmers to develop application programs far more rapidly. But course security of communication — notably between the plant control CPUs and the host computer — will increase in importance.

Total Distributed Control is the name of a Honeywell system (TX 2000) allowing operators to investigate plant conditions simply by pressing buttons and receiving the result displayed on a VDU. D. G. Twydel sees this as a powerful process controller management system. There is a basic controller that can perform up to eight control functions, selected from 2 algorithms; between the control hardware and the operator interface is a cable capable of supporting 63 control or monitoring devices over a highway of 40 kilometres. Among other features the system will scan up to 60 alarm tag numbers, equivalent to monitoring up to 1,200 analogue points every 3 seconds.

However, Glaxo, which commissioned a large batch fine chemicals factory last year, based on design work that started in 1976, is controlling it by two online computer systems with a third one in spare. Overall arrangement is shown in Figure 1. Few local control loops are provided. But in some areas local logic systems carry out simpler tasks like factor services on process vessels and relieve the computer system of some rudimentary sequencing. The local logic is initiated by the computer systems.

This factory — which has four process stages, the product of each stage feeding in to the next — is the first of this company's batch operated plants to be placed fully under computer control. Robert Doig states that the factory has been successfully commissioned giving "significant and on-going benefits" such as minimising production staffing levels and loading the most extensive set of safety features of any of the group factories.

Each system comprises a control processor with a 128K word memory, a fixed head disc for data storage, a dual floppy disc drive for back-up data storage and system loading, and a system printer. Analysing experience with the project, Doig identified these as the key features of process requirements:

- compilation of a full system specification identifying computer hardware arrangements and software tasks in detail, early in the project;
- provision of sufficient experienced staff, early, for design, testing and commissioning;
- organisation of good local maintenance facilities and spares for the computer system by outside the factory maintenance team;
- introducing a review procedure to discipline and approve proposed changes to computer tasks.

Thus this report, like others, indicates that the use of computers in controlling chemical plant can be successful if adequate advance studies and preparation are made, but the success is not automatic.

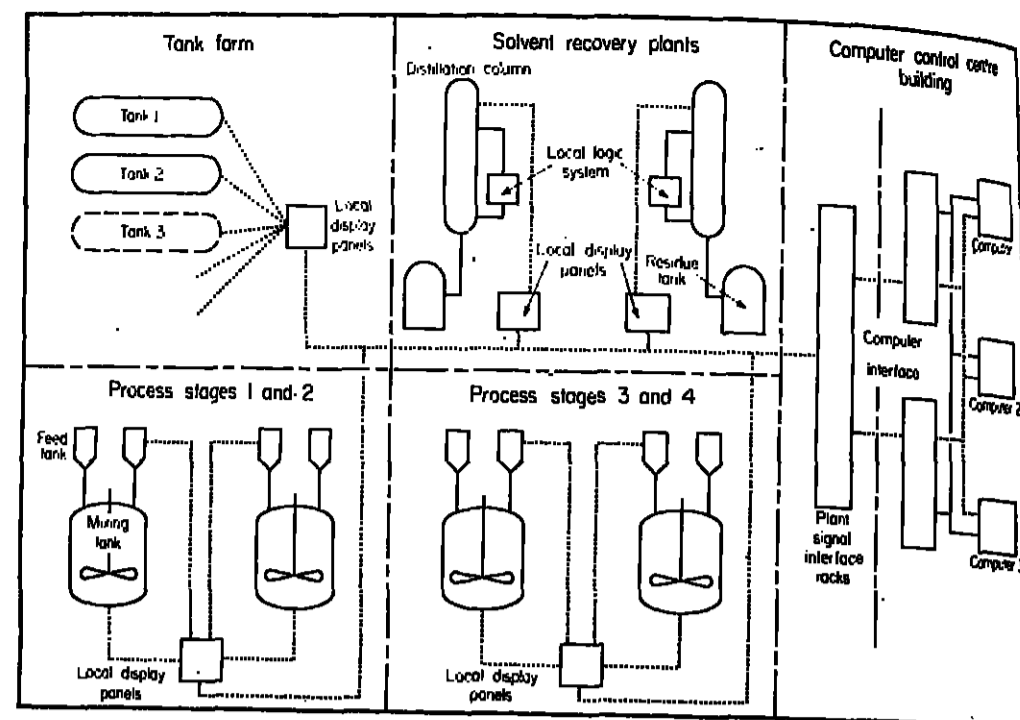


Figure 1. Overall control system arrangement.



Steel

words of memory, and no stand-by; it will have dual floppy discs to collect batch record data and load in sequence or system software. There is a background computer on site where floppy discs can be taken by hand and the control room is now 3 metres from the nearest plant. The control room will not be continuously manned but if there is an alarm, the computer will activate a bleeper carried by the operator.

In the latest plants, a noteworthy trend is towards a distributed approach.

Ten years ago, computer process control was usually carried out by a single CPU. Connected to this were disc drives, magnetic tape units, card reader/punches, tele-printers, VDUs, analogue inputs/outputs and digital inputs/outputs. To avoid the risk of shutting down the process if there were a failure on a disc drive, a dual computer system would have to be installed. The distributed approach to computer control schemes for processing is described by B. Cessford of Digital Equipment.

Data processing and management functions are still handled by a central CPU, called a host. But process interfaces are connected to separate CPUs, each controls a different section of the plant and operates independently of the host. Consequently a disc failure will not disturb the working of the CPU responsible for process control.

This trend is likely to continue, says Cessford, using cheap reliable

## BOOK REVIEWS

### 'Quick fix' approach to maintenance

*Techniques of Program and System Maintenance*, edited by Girish Parikh with foreword by Gerald M. Weinberg. 289 pp. US\$24. Lithotech Inc, Lincoln, Nebraska.

If a software product is successful, there will be a long period following its initial release while further work is performed to correct any remaining errors and add enhancements to make it still more useful.

This stage in the development of a product has become known as "maintenance", and while it is clearly important in giving software products a long and useful life there is an understandable tendency to re-

gard maintenance work as somehow inferior to development work on new systems.

In fact, the problems of software maintenance can be as challenging as any encountered during software development and coping with them successfully can bring huge gains in prolonging the life of existing software products.

All these points and many others are covered in this book, which lays claim to being the "first and only book devoted to program and system maintenance."

It comprises a collection of short articles on various aspects of the maintenance "process"; most of them have been published

previously in various books and periodicals but there are some new contributions, principally by the editor.

Contributors include Gilb, Bachm, Yourdon and Myers, and the editor has also contributed an annotated bibliography.

Unfortunately, many of the contributions have a superficial and slightly gimmicky air despite most of the important points about maintenance being made somewhere in the collection.

The book as a whole leaves the impression that the editor sees the problems of maintenance and its management as susceptible to one or more of the many "quick fixes" that

are offered in the selected contributions.

This is a pity, for the best of the current software engineering literature shows that software maintenance activity is well understood by now.

Moreover, planning software projects from their inception with the eventual problems of maintenance in mind can lead to substantial overall cost reductions as well as to more satisfying work for maintenance programmers.

A more thoughtful book along such lines would surely have been more useful than the present one.

PETER WALLIS

## Filling the selection void seen as a personal crusade

*Buying a Business Computer* by Michael J. L. Turner, 178pp £9.75. (paperback). The First Computer Handbook, Hereford.

INDEPENDENT management consultant Michael Turner is publisher as well as author of *Buying a Business Computer*. The resulting lack of editorial constraint becomes apparent as one reads through the book. It also becomes highly irritating.

Sentences are short, often ill-constructed and frequently illogical. Cliches rule the roost, few stones are left unturned, communication gaps bridged and prime objectives tackled.

The book is based largely on the author's *First Computer Handbook*, published four years ago and even this revised and heavily abridged version could have been overtaken by events and progress.

Users are frequently urged to deal only with recognised suppliers and advisers while tenders and proposal formats constitute a third of the book.

### Bad news

Increasingly, however, the prospective first-time user limits his evaluation considerations to the rival merits of the local high street micro stores.

This aspect of selection does not appeal to the author, who believes that the selection process should be fully organised and structured.

Turner also believes that there is little advice for the first-time user and sees filling this selection void as a personal crusade.

He expresses the view that it is bad news for the new user to have

an abundance of choice and levels of advice in respect of that new system.

Mr Turner emphasises that advice is essential if the reader wishes to avoid the minefields, dilemmas and vested interests which stalk the industry.

It emerges that these vested interests range from consultants to equipment suppliers. In fact, it is a twilight world as far as professional advisers are concerned, and Turner has scant respect for most levels of consultancy.

Accountants are dismissed because of the size of their organisations and related fees while management consultants are not relevant to the needs of the company.

Software houses concentrate only on a limited range of suppliers and Turner claims that they have a vested interest in follow-up consultancy activities. System houses also have special relationships with selected suppliers and are therefore far from independent.

Academic consultants do not have the practical expertise while teams from parent companies are suspect on the grounds of politics, experience and general interference.

This just leaves the independent consultants to provide consultants of reputation, integrity and quality. To emphasise the point, Turner thoughtfully adds his own consultancy phone number.

### Last resort

The book is certainly full of information, possibly too much for many potential first-time business computer users. Anyone dedicated enough to work through the de-

sion checklists would probably give up at the first hurdle and contact the local bureau.

It is seldom realised that the decision to install a computer is not taken as a result of a long, cool and detached evaluation study; in many cases, it is a decision of last resort.

It is taken at the eleventh hour to stave off total office collapse. Workloads may have increased or changed, key staff threatening to leave and management complaining that their information reports are as reliable and timely as British Telecom parcel delivery service.

Selection policies are often limited to contacting friendly competitors, responding to direct mail or Press display advertising of computer manufacturers and suppliers. Implementation rather than selection procedures are more relevant to first-time user needs.

The book pays little attention to microprocessors, software packages, privacy and the ever-present problems of personnel relationships when new computer systems are being installed.

Even less regard is given to potential suppliers. Despite being billed in the index, page 173 studiously avoids any such listings. "Vested interests" have no place in this book.

There is certainly a need for an informative and independent guidebook for the first-time business computer user. Unfortunately, *Buying a Business Computer* has more appeal and relevance to the DP manager than the company MD.

ALAN SIMPSON

## Sound advice for first buyers

*Your Small Business Computers* by Donald R. Shaw, £12.70, 256pp. Van Nostrand Reinhold Co.

THIS book contains a great deal of helpful information for managers of small firms considering the possibility of using computers in their business for the first time.

Although written for American readers, Shaw offers sound advice on preparing for negotiations on the system required and on dealing

with suppliers.

Unfortunately, the first part of the book contains the usual technical explanations of computers and software.

To face this daunting prospect in the early stages may discourage the manager from reading further and it may well be better for him/her to read Chapters 2 to 6 after the others.

Many managers new to computer problems would have preferred

a more specific guide to relevant points telling them whether a computer is needed, what makes a good computer application, and whether to buy or rent or use a bureau.

Checklists in these areas would have been helpful and it should be possible to present these in a non-technical manner. Shaw says that "Automation has the potential for dramatically enhancing business

if the method is wisely chosen and properly managed... but some small businesses are getting themselves into trouble."

This reflects the position fairly and indicates that the businessman needs to build up his knowledge of computer systems and their purchase before deciding on a course of action. The book makes a useful contribution to that knowledge.

A. J. THOMAS

## Text book calls for detailed study

*Systems Management* by Andrew Parkin, 168pp, £7.50. Edward Arnold Ltd.

THIS is clearly a text book to use in connection with discussions or lectures and most readers will find the need for a fuller treatment of the topics that are covered.

Parkin has developed his own style of presentation, using a brief description of his topics and back-

ing them up with questions, answer points and case studies.

The first two-thirds of this book is heavily reliant on management theory. MBO (Management by Objectives), RRA (Resource Requirements Analysis) and MOC (Measure of Effectiveness) are applied to systems management.

Many data processing managers will find this inconclusive and dif-

ficult to adapt to their situations.

The last part of the book which deals with project control and personnel is more discursive and likely to interest practical managers.

Parkin has produced open-ended material, which should provoke thought and response; but many would wish to see the ideas put to a more specific test, with some positive indication of the best

line of action to take in given conditions.

It may have been more helpful to give fewer case studies, and to have defined them in more depth in order to show their relationship with other similar situations.

This is a book requiring careful and detailed study and time to develop the themes outlined.

A. J. THOMAS

## Too little, too late

*Microprocessors in Manufactured Products*, by Jim Northcott, John Marti and Anthony Zellinger, £3.25. Report No. 596 (Nov 1980) of the Policy Studies Institute.

THIS joint authors of this report have interviewed senior personnel of 90 British companies operating in five different sectors of industry.

Despite all this work, the only conclusion they reach which is not already well known, is that many domestic firms would like standard industrial microprocessors to be produced in this country.

Many people deserve credit for visiting this country to the importance of microprocessors.

They include the NEDC, the 1978 Labour government, the Department of Industry and the NED. But from the Policy Studies Institute it is "too little, too late".

JOHN WALKER

## Useful addition to Algol-ali

*Introductory Algol 68 Programming* by D. F. Bradford and N. Walker, 281pp, £12. Horwood Ltd, Market House, Cooper Street, Chichester PO19 1EB.

THERE has been a plethora of books on the standard language and it is often difficult to understand why publishers bring new titles with such regularity when they often offer little more than has been seen before.

This book deals with Algol-68 and is based on a course of lectures given for a number of years at Chichester, where the joint authors are members of staff of the University Department of Mathematics.

From the foregoing, it is obvious that any reviewer must closely find specific reasons why any new publication should be recommended in place of addition to the texts already in common use.

### Coherent

At £12, there will have to be paperback version before it can be visualised students purchasing a book in any quantity, which is the text can be included on several grounds.

Drawing on their teaching experience, Brifford and Walker present the topics in a sequence with a good sequence of examples and exercises.

There are many examples of their work, having been on both an ICL 1906A and 1124 as well as the CDC 4600 and the Cyber 175 at the University of Illinois.

The typeset is clear and sample output provided from worked examples even more which contrasts with the examples appearing in many language texts published previously.

### Versatility

After an introduction to chapters covering basic features of the language there is a chapter on studies comprising five case studies which are carefully to illustrate the versatility of Algol.

The first is a simulation of a clock mechanism, the second a program to solve algebraic equations by Newton's iterative method, the third a wage-matrix and the fourth a program.

These provide a useful contrast to the earlier chapters, example on wages is particularly unfortunate choice.

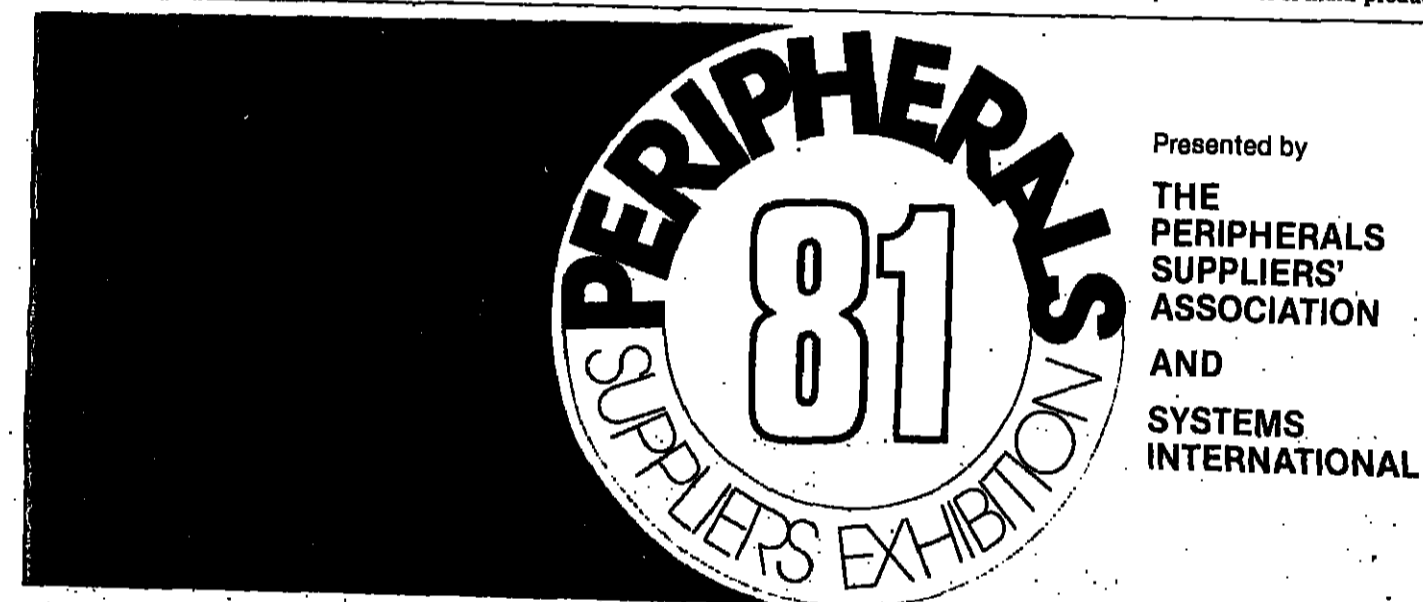
Brifford and Walker "please do not write to us about that; we have over-estimated PAYE tax calculations," by continuing by justifying the program demonstrating Algol's facilities in producing prime factors.

While not disputing the rhythm they used to computer authors should be taken to producing a program which not carry out data validation does not contain control of industry.

The final chapter is a more containing advanced features of both Algol 68 and Algol 68. Despite extended editing the case study on wages, it is to be considered as a work in addition to any library of a new series, Computer Applications.

All the publications directed to a high editorial, but the hardback price of the book to be more comparable with the libraries than on student bookshelves.

D. V.



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Jeffrey Little

HAVE you ever tried to connect your mainframe to a mini? Have you ever wanted to pass computer-readable data to another company? If so, you will have first-hand

experience of the problems involved, and you must have wished for a standard interconnection method. Standards for Open Systems Interconnection (OSI) are being

prepared to help solve this sort of problem. It is described here by KIRK GEE, a senior consultant with the National Computing Centre's distributed computing div.

# Solving the problem of system communication

THE purpose of OSI is for any user (or his computer, program or terminal) to be able to communicate with any other. Ideally each sender should not need to know the technical characteristics of any recipient, except that he observes the conventions necessary to make him an "open system".

A system is open if it recognises and accepts the standardisation procedures for information exchange. An open computer system is not under any compulsion to receive everything that is sent to it - it is not like the postal service in this respect. The openness refers only to the potential of the system to communicate with others, to receive data and understand it.

This potential can only be exercised if both parties agree. OSI will allow users to link together computers, terminals and other computing-related devices from different manufacturers so that they can co-operate to perform a single task. The task may be as simple as using a terminal to interrogate or update a file, or it may be as complex as in-

terlinking processors at an oil refinery.

OSI will also allow a user to access, from a single device, systems belonging to a number of other organisations, provided of course that he has their permission. This has previously been feasible only where the organisations involved have agreed to use the same connection and access procedures.

## Opportunities

But OSI will provide new opportunities. For example, imagine a group of separate companies, each running its own DP system. To exchange information stored in these systems it may be necessary to interconnect them. This can only be possible if standards for interconnection, OSI standards, are observed by all the participants.

Many other situations would be eased if standards for OSI could be agreed soon. If all computer systems presented to the outside world a standard image with common communications interfaces, it would be possible for any compu-

ter or terminal to be connected to any other and exchange meaningful information.

Meaningful information is a most important point deserving further examination. Being able to interconnect computing systems and exchange bit strings is not enough; the recipient must also be able to understand the messages being sent to him. Thus we also need conventions which all users of an open network must observe to ensure that the messages are exchanged in a standard manner, and can be interpreted and understood when received.

These conventions are called data communication protocols; by standardising them, open interworking will be made possible.

We usually divide the functions necessary for OSI into those which are communications-oriented and those which are processing-oriented, as shown in Figure 1. The boundary between the two types is known as the transport service interface.

Let us now look at what we need for OSI. To start with, a user needs a

data communications network. This can be an existing system, such as the public telephone network or a private network, or it can be a purpose-built data transmission network.

We are currently witnessing the widespread development of national and international switched data networks which make possible the interconnection of different computers and terminals. The telecommunications authorities are responsible for these, and working through CCITT, their representative body, they have set standards concerned with their use.

Thus we have, or will soon get, standards for interconnection of computers, ie the communication-oriented functions and low-level protocols.

## Model

Responsibility for standardising processing-oriented functions rests with ISO. These standards are concerned with the so-called high-level protocols which must be independent of the actual transmission mechanism being used.

To structure the standards work we also need a model which divides up the problem into manageable portions, so a layered approach has been adopted with clearly defined interfaces between adjacent layers and separable functions for each layer.

The ISO subcommittee on open systems interconnection has produced a seven-layer model.

The physical layer is concerned with the physical and electrical connections to the data communications network, which is the physical medium for interconnection.

The data link layer provides techniques to ensure that error-free data may be transmitted using error-prone physical circuits.

The network layer provides the switching and routing functions for the data to be exchanged between systems.

The next, the transport layer, insulates the processing functions

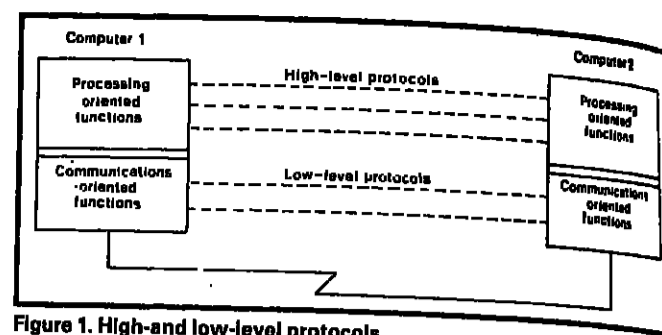


Figure 1. High and low-level protocols.

from the characteristics of the data communications network actually being used. These four lower layers constitute the communications-oriented functions and are collectively known as the transport service.

The next layer is the session layer which handles the logical connections between co-operating processes or users in the two end systems.

The presentation layer is concerned with "presenting" the data to the highest layer in the correct form for the applications to understand it.

The application layer is concerned with functions which directly serve the ultimate users of the network.

The ISO reference model for open systems interconnection was produced to provide a common basis for the co-ordination of standards development in the subject area, and to allow existing standards to be placed in the overall architecture.

It is not intended to define the services and protocols in sufficient detail for it to serve as a specification for an implementation of the architecture.

It is meant to be flexible enough to accommodate changes in technology and in the applications for which it will be used, as well as allowing for a gradual change from existing systems to a full implementation of open systems interconnection standards.

In fact the reference model, in its final status, will be a framework which will define precisely and unambiguously the behaviour of an open system.

## Problems

But the model will serve other purposes depending on the interests of those wishing to use it. Already some telecommunications authorities plan to use it for the telex or videotex services, while some computer manufacturers continue to develop their network architectures, in compliance with the reference model as far as the current definition of it allows. This reflects the fact that the model covers a wide range of topics in both computing and communications.

Problems obviously exist in adapting existing architectures to the reference model, especially in the upper layers. Indeed, the presentation services, for virtual terminals or remote job entry for instance, have been studied and implemented by some computer manufacturers in advance of the work on open systems interconnection, so these may have to be adapted in order to fit into the model's framework.

The three lowest layers of the model relate closely to the physical properties of services offered by the telecommunications authorities (PTTs).

The lowest layer, the physical layer, specifies the physical properties at the interface with the transmission medium. The V24 interface, circuit definition used for an analogue point-to-point circuit is implemented in the physical layer.

Packet switching networks may require the use of the CCITT X25 recommendations. Its relationship to the OSI reference model is shown in Figure 2.

At the higher levels of the reference model, there are certain services which are common to most user systems and which can be sensibly standardised. These are:

- The virtual terminal service which eliminates most incompatibilities between applications and terminals using them.
- The virtual file service which overcomes the differences in file structures found in a distributed system made of dissimilar computers so that files can be transferred.

accessed and manipulated from a remote location.

• The job transfer and manipulation service which allows jobs to be entered and manipulated on various host computers from remote locations.

Between the high-level and low-level services is the transport service which will isolate the processing-oriented functions from the characteristics of the data network and provide the facilities for a universal data transmission mechanism. This is currently receiving a good deal of publicity, with several rival proposals under consideration.

All organisations which use computers will be influenced by open systems interconnection standards. Computer manufacturers and software and peripheral suppliers will also be affected, possibly very significantly.

Those who stand to gain most from a standard open systems interconnection architecture are users. They will be free to choose their computers, terminals, discs and printers from all the suppliers who observe the standards, in the knowledge that they will be compatible.

They will be able to choose the computer which is most suitable for their particular task, rather than be constrained by the equipment available from their main supplier.

The availability of such a standard architecture is expected to assist the development of distributed systems - not necessarily open networks in the wide sense used in the reference model, but systems built more easily and at lower cost.

Distributed systems, if designed and managed properly, can bring benefits to their users as well as encouraging more applications and consequently higher sales.

But in spite of these prospects, suppliers of computing equipment and services today have a difficult decision to make if they plan to provide distributed systems. Either they can design an overall plan, together with sets of rules, to which all their related products conform - or they can wait for a universally agreed technique to become available.

## Benefit

If they choose to provide their own design for a distributed system architecture it is unlikely to be compatible with all the others on the market, or with the one finally agreed as a standard. Besides, unless the manufacturer has very many committed customers he could lose orders from organisations which already use other makes of computer.

If they decide to wait for a universally agreed standard distributed system architecture, then in the interim they run the risk of losing those customers who want a proprietary system now.

However, a standard architecture or reference model will be of great benefit to all suppliers. They will have a definite framework which they can follow, and the knowledge that if most of them observe the standards they will not have to waste valuable effort in constructing special hardware or software for interfacing to equipment of another supplier.

This has been an introduction to the ideas behind the OSI work. The detailed definitions are contained almost entirely in working papers, written by experts for experts working in the area. To bridge the gap NCC has published a guide entitled *An Introduction to Open Systems*. Long Corporation, 1000 Corporate Park, Westborough, MA 01581, USA. Tel: (01) 941-3604.

## PRODUCT NEWS INTERNATIONAL

### CII-HB markets the Multics system

A UNIVERSAL multiprocessor system, Multics, is available from CII-Honeywell Bull.

The hardware and operating system are designed to ensure high levels of security. The DPS 68M and DPS 870M computers used for Multics (Multiplexed Information and Computing Service) include from one to six central processors; and each system module can be duplicated to provide a dual system.

Main characteristics of the system's hardware are: One level virtual memory which is extended to files; all generated code is re-entrant; dynamic linking; eight rings of protection level which control the rights of each process in the system and guarantee data protection; control by hardware of access rights and multiprocessor hardware enabling each processor to execute any task (system or user).

The system is intended primarily to provide a range of services to end users in the fields of data processing and the communication of information. Software features

include a simple user environment encouraging communication between users, flexible control language which can be formed into programs, and software designed as a coherent system. The resulting standardisation enables information to be passed freely to all processes in all execution modes (all inter-language calls are permitted).

The systems will be delivered from the second quarter of 1981. The sale price of an entry-level Multics configuration, built around, for example, a DPS 68M processor of 4 megabytes, with 2,500 megabytes online storage, is about £430,000.

The DPS 870M is about 1.7 times more powerful than the DPS 68M. The sale price of a configuration built around a DPS 870M processor of 6 megabytes, with 3000 megabytes of online storage is about £780,000.

Monthly rental of Multics basic software costs about £33,000.

CII-Honeywell Bull (CW), 94, Avenue Gambetta 75020, Paris.

### Dumb terminal launch

A DUMB Terminal video display with visual attributes and limited editing is available from Lear Siegler Data Products.

Designated the ADM-5 Dumb Terminal, the VDU provides users with reverse video, reduced intensity, limited editing capability and a gated extension port for selected transmission to any serial RS 232C peripheral.

It has a full 12 inch anti-reflection screen with 1920 characters, upper and lower case, a numeric keypad, ten switch selectable baud rates (75 to 19200), and a programme mode key designed for use as a programming aid to write into display memory.

The ADM-5 displays all the control codes in addition to the 96 ASCII character set.

Lear Siegler, Orchard House, Connaught Road, Brookwood, Surrey. Tel: (048 67) 80666.

### Low-cost VDU range extended

BURNT Hill Electronics has extended its range of 19 inch rack-mounting visual display units with the intelligent BH 913 and BH 921 terminals.

Main advantages claimed for the terminals, which feature one and two page memory respectively, are those of low cost, ease of maintenance and industry compatibility.

Features of both units include: a 12in CRT displaying 24 lines of 80 upper or lower case characters on a 7 x 10 dot matrix with 12 x 10 resolution, dual intensity display being selectable.

Additional features of the two-page memory BH 921 include 80 storable tab positions and a printer port for hard copy.

Associated remote keyboards are available for the terminals - the BH 914 for the BH 913 and the BH 922 for the BH 921, the BH 914 featuring 82 keys including a 14-key numeric keypad.

Burnt Hill Electronics (CW), Holder Road, Aldershot, Hants GU12 4RH.

### Cable faults

A RANGE of diagnostic devices, available from Thames Electronics, are designed to identify faults in data communications environments.

The range includes a multiway cable tester, developed to test V24/RS232 cables in situ. By inserting the transmitter at one end via the D type connector, a sequential positive voltage is passed over each wire in the cable. This voltage is detected by the receiver and displayed on an LED array numbered 1-25. It will show crossed wires, dry joints or disconnected wires.

Prices start from about £150. Thames Electronics, The Freeland, Higgs Park, West Molesey, Surrey. Tel: (01) 941-3604.

### Broad-band FET series

A SERIES of VMOS power FETs for broad-band applications in high frequency amplifiers is available from Semiconductor Specialists (UK).

Called the Silenex DV-2840, -2880 and -28120, they are designed for applications in HF, VHF and UHF amplifiers in class A, B or C operation, and are capable of delivering 40, 80 and 120 Watts respectively. Each delivers its rated output at 28 Volts and provides a minimum power gain of 10dB at 175 MHz.

Prices start at £25 in quantities of one to 29.

Semiconductor Specialists (CW), Carrol House, 159 High Street, Yewstey, West Drayton, Middlesex. Tel: (08954) 45522.

### Oscilloscope

A TEN to 15 Mhz dual trace oscilloscope is available from Scopex Instruments. Called the 14D10, it replaces the company's 14D10B model. The instrument is controlled by a potentiometer and a pushbutton switch, which trigger positive and negative edges of digital pulse trains without readjustment.

The timebase ranges from 100 microseconds to 10 milliseconds. Add and invert facilities are provided.

It costs £230 + VAT. Scopex (CW), Pimmore Industrial Estate, Pimmore Avenue, Letchworth, SG6 1JJ. Tel: 04626 77771.

### Approval given

APPROVAL for use over Post Office lines has been given to Intercom's Dex 1500 digital facsimile terminal, which is compatible with the CCITT Group III.

Intercom's Communication Systems Ltd (CW), 39 Monmouth Avenue, Slough, SL1 6BS. Tel: 0753 70821.

### Designed to cut down noise from printers

A SERIES of acoustic enclosures from Power Equipment is designed to reduce the noise of a wide range of popular data and word processing printers. Known as Silencers, the enclosures consist of two sections.

A heavy gauge steel tray fits beneath the printer. This is lined with dense vibration-resistant foam which absorbs vibration and noise. The main casing is sheet steel fabrication finished in Mist Grey or anodised.

The entire top and front sections of the enclosures are one-piece transparent acrylic sheets which lift up on gas-filled struts for access and provide visual observation of printer operation. A small fan is also fitted in the casing to circulate air and keep the printer cool. Full facilities are built into every Silencer to accommodate both rear and base paper feed inlets and outlets.

Up to 75% reduction is claimed for the series, which is suitable for use with about 60 different models of receive only printers including machines from Anadex, Datasah, Diablo, Facit, Hewlett Packard, Manne-mann, Mael, Quine and Tally.

Power Equipment (CW), Kingsbury Road, London, NW9 8UD. Tel: 01-205 0033.

### Rair enhances Decwriter

THE enhanced Decwriter IV 1A34-AA has been added to Rair's computer terminal catalogue. Improvements have been made in forms handling capabilities and the new model is a lightweight 30 chips teleprinter designed for the office environment. Its 9 x 7 matrix print head prints the full upper and lower case ASCII character set

on single sheet, roll or tractor feed paper. It communicates at 300 baud via either an RS232C or 20mA current loop interface. Its feature is the ability to print variable character sizes. It costs £625.

Rair (CW), 30-32 Neal Street, London WC2H 9PS. Tel: 01-836 4663.

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## Satellite communications and you...

### in Practical Computing

The February issue, available from leading newspapers, examines the feasibility of exchanging data between home computers, using satellites. In principle a small rooftop dish can allow a home computer in the UK to communicate with other users in the USA and Europe. Just think what that could do to your telephone bills.

Also in this issue:  
Reviews of Mupet, a multi-user system for Intertek Pci computers; a new Pet colour monitor and the Data Applications personal computer.  
And in the software news: a review of OZ2 - a powerful information-handling system which can be implemented on a Pet.

If the applications area, you see how a firm of manufacturers is making use of a micro technology coming on line and often did craft.

All this plus our regular advice columns including a Pet, Apple and Tandem service for only 50p. From your newspaper or post this special new.

Our January 21.

### Practical Computing

To: Marketing Department, Room 216, IPO Electrical Electronics Press Ltd, Orchard House, 159 High Street, Yewstey, West Drayton, Middlesex. Tel: (08954) 45522.



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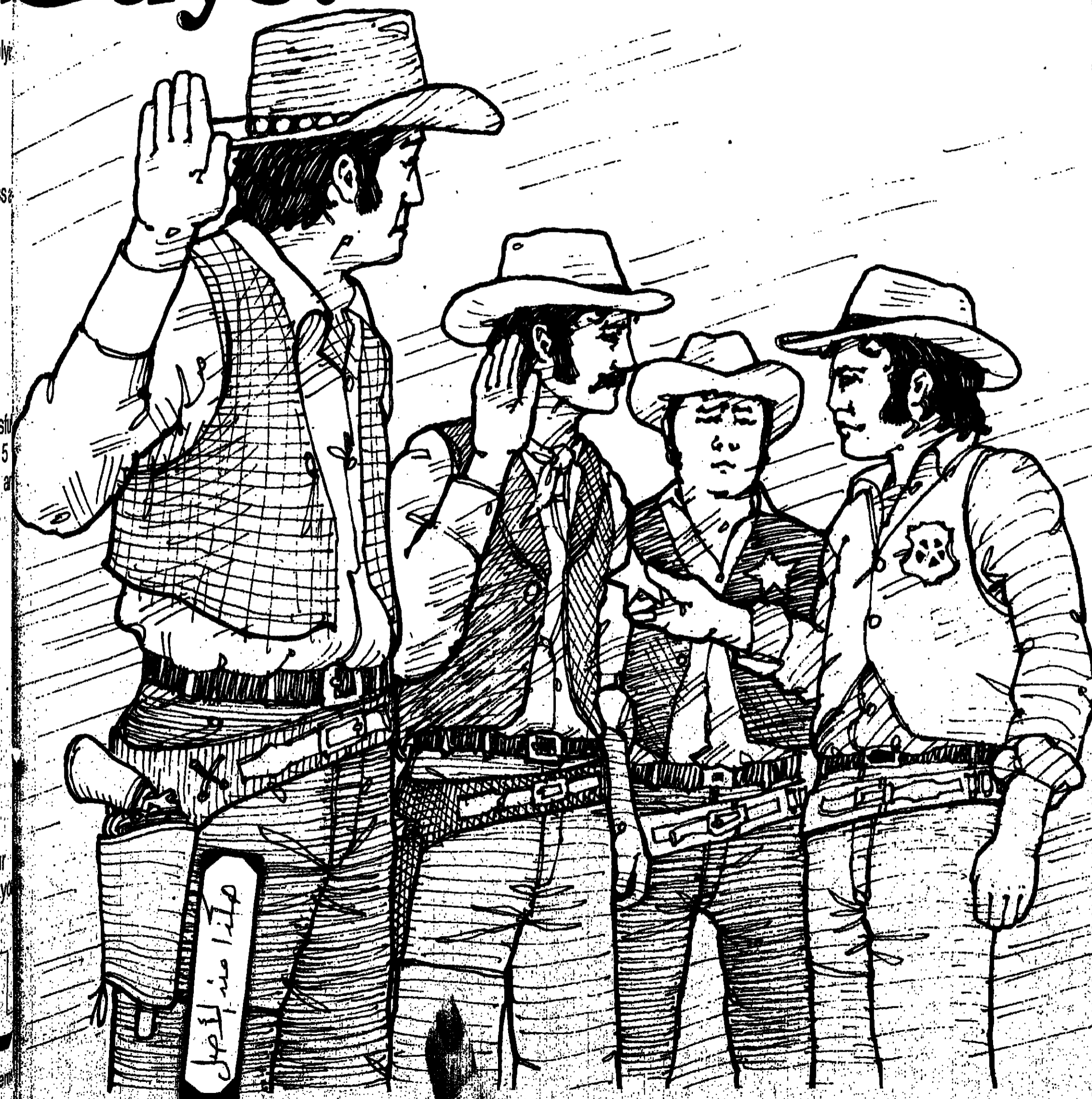
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A renowned Financial and Investment Consortium, long established in The City, currently requires Junior Assembler and PL-1 Programmers for its recently upgraded IBM mainframe and mini-computer installation. Suitable candidates should have a minimum of one year's Assembler or PL-1 applications programming experience, although in certain cases IBM COBOL will be considered. Applications areas include Property and Portfolio Management, Debenture and Unit Trust Investment and Stocks/Shares Up-Date. In-house training and seminar courses will form an integral part of the education programme. Ref: L/5/B

## Real-Time Programmers

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A leading Systems House, based in Central London, is seeking to employ additional Programmers to join its young, innovative software development team. Candidates should have a degree in a numerate subject and at least two years' real-time programming experience in either FORTRAN, CORAL 66 or Assembler. Knowledge of particular hardware is

not important, but exposure to mini computers, in particular DEC's PDP range, HP2100, Prime 500 or Honeywell Level 6, would be advantageous. These positions will appeal to applicants who enjoy working as a member of a small team involved in the design, coding and testing of real-time software. Ref: L/5/C

## Management Consultants

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Our clients have an enviable reputation as a Management Consultancy and Research Organisation. The Company is now seeking several additional Consultants and Senior Consultants. All candidates are expected to have good personal communication skills, be self-confident and highly presentable. Generally, preference

will be given to graduates aged 28-34 years with proven abilities to appreciate and identify business management and technical implementation problems. In particular, candidates with a knowledge of structured design techniques, data management, networking and VIEWDATA/PRESTEL applications are encouraged to apply. Ref: L/5/D

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A leading supplier of Industrial and Process Control Hardware and Systems Software is seeking to recruit Applications Programmers and Support Analysts for its U.K. Headquarters. All respondents must offer at least one year's experience in either Assembler or FORTRAN as a primary language whilst those with exposure to PASCAL, BASIC or COBOL

will be favourably considered. You will play a significant role in all stages of software and systems development from product planning to installation and live running. Since travel both nationally and internationally will form a significant part of the job function, mobility is an essential criterion for these positions. Ref: L/5/E

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For further details or an application form please telephone Paul Newman, Personnel Manager on Nottingham (0502) 254831 extension 371 or write to him at Plessey Communications and Data Systems Limited, FREEPOST, Trafalgar Road, Boston, Nottingham NG9 1LA.

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# £12K APPOINTMENTS

## Management Consultancy

Data Processing

London based  
up to £16,000

Your work in a software house will have given you a taste for the challenge of advising a range of clients on technical DP problems, and leading a variety of projects to successful implementation. We offer the opportunity for a broader challenge, investigating both technical requirements and their business justification, presenting your findings to senior management.

To join us you must be around 30, with a 1st or 2nd class degree and a successful career record, ideally gained in a larger software house. Alternatively, you may have comparable experience from a manufacturer or large installation.

If you match our needs, and we match your ambition, find out more about our work which includes DP strategy studies, systems reviews, hardware and software selection, and project management.

Telephone Peter Williamson on 01-248 1511 during office hours or on (0474) 872793 in the evening, or write to him enclosing a brief c.v. quoting reference 956/C on both envelope and letter.

**Deloitte  
Haskins + Sells**

Management Consultants

128 Queen Victoria Street, London EC4P 4JX

## You could earn £14k per annum in computing

The Northern Ireland Civil Service offers excellent opportunities to gain valuable experience within a large computer installation. There are prospects of promotion to posts and salaries of up to £14,000.

Current vacancies exist in the following grades:

### 1. SYSTEMS ANALYSTS: £6,960-£8,555

Applicants must have either a minimum of 5 years' relevant computing experience or at least 4 years' experience plus a degree, HND or equivalent qualification in computer science or other allied disciplines with computing as a main subject. Candidates' experience must include a substantial period in systems design.

### 2. PROGRAMMER ANALYSTS: £5,790-£7,285

Applicants must have either a minimum of 3 years' relevant computing experience or at least 2 years' experience plus a degree, HND or equivalent qualification as above.

### 3. PROGRAMMERS: £4,900-£6,230

Applicants must have at least one year's practical programming experience or hold a degree, HND or equivalent qualification as above. Final year students who expect to obtain this type of qualification in summer 1981 may also apply.

Experience of ICL 1900/2900 series computer (including PLAN COBOL GEORGE Operating Systems and Direct Access) or mini computers or the application of dedicated processes in the medical and scientific fields would be an advantage.

Grading and starting salary will be related to qualifications and experience. Systems Analysts are paid an incentive bonus of £854 per annum (within scale maximum) after 2 years' satisfactory service. Programmer Analysts are paid an incentive bonus of £710 per annum (within scale maximum) after one year's satisfactory service.

The Civil Service Commissioners may decide to interview only those applicants who appear from the information available to be best qualified.

The appointments offer the following benefits:

1. Good career prospects - the highest systems posts command salaries of up to £14,000 per annum.
2. Systems Analysts and Programmer Analysts are entitled to at least 22 days' leave per annum in addition to public holidays. Programmers are entitled to at least 20 days' leave per annum in addition to public holidays.
3. Non-contributory pension scheme apart from a deduction of 1½% towards provision of widow's pension in the case of male officers.
4. Flexible working hours may be worked at certain locations.
5. Opportunities to broaden experience in a wide range of application areas.
6. Training and retraining as necessary.

Informal enquiries may be made by telephone to Department of the Civil Service (telephone Belfast 780761, extension 2708) or Department of Health and Social Services (telephone Belfast 44377, extension 261).

Closing date: 18th February, 1981.

Job Ref. SB 6/81/W, Tel. Ext. 256.

The posts are open to both men and women. Please write or telephone for an application form (using the extension number indicated and quoting the job reference) to the Civil Service Commission, Rosepark House, Upper Newtownards Road, Belfast BT3 9NR (telephone Dundonald 4586). Completed forms must be returned to arrive not later than the closing date stated.

**NORTHERN IRELAND  
CIVIL SERVICE**

**COMPUTER WEEKLY  
CLASSIFIED**

DIRECT LINE 01-661 0121

the newspaper computer people rely on

## Chief Programmer

(Salary up to £12,500 plus substantial benefits)

required by Britain's leading property company.

Land Securities (Management) Limited, the leading property company, is in the process of developing a range of new computer systems. These will be based on a Honeywell Level 64, which has recently been installed, will utilise TDS and IDSII software and will incorporate a network of terminals both in the Head Office and Regional Offices.

A Chief Programmer is required to complete the team responsible for managing the development of these systems. Applications are invited from men or women who can demonstrate:

- Experience of Cobol programming in an on-line environment.
- An ability to contribute to the programming methodology used by the installation.
- Experience of managing a team of at least ten programmers.

Experience of the use of Honeywell Level 64 or 66 computers and/or a Codasyl database management system is desirable but not essential.

A starting salary of up to £12,500 per annum is offered. Other benefits include a non-contributory pension scheme, an annual bonus, a share participation scheme and free BUPA and restaurant facilities.

Please send brief details of qualifications and experience to the following address. (Applicants to our recent advertisement for a range of computer staff need not re-apply).

Management Services Manager,  
Land Securities (Management) Limited,  
Landsec House, 21 New Fetter Lane, LONDON EC4P 4PY.

£17,460

### ITALY

### PROGRAMMER/ ANALYST

TASK Information retrieval services, TASKS in the area of File Load, Reload and Maintenance Accounting, Statistics and Special Utilities, Programming MODS, creation of new programmes and execution of large job sequences.

QUALIFICATIONS Extensive recent experience on IBM 370 or 30xx Systems using Assembler and JCL.

CONDITIONS The assignments are based in an attractive small town set in countryside 16 miles from Rome and within easy reach of Mediterranean beaches. Duration 12-18 months + 30 days' paid holiday, return air fares paid and accommodation arranged.

Please rush your c.v. to:

Mr. Tony Jary  
ABLAIVE LTD.  
9 Church Road, Long Ashton  
Bristol BS1 9SL  
Tel: Bristol (02727) 66785



### AIRCRAFT SIMULATOR SPECIALISTS

Paris

Hugh Pushman Associates Limited require software engineers experienced in aircraft simulation, to join their expanding team located in Paris.

Candidates should have 3+ years' experience, preferably in the design and development of aircraft simulation systems, engine, radio and navigation systems. French language skills are desirable but not a requirement. Permanent positions with salary and excellent benefits offered. Alternatively, temporary contract position may be offered.

Contact: Mike Bare or Ray Cleaver on 0203 61166 or mail to Hugh Pushman Associates Ltd., Newfoundland House, The People, Dorset BH16 1HS.

## Computer Professional Recruitment Consultancy

R35 Sales Executive E.Midlands/England  
UP TO 8K BASE, 17% ON QUOTA + 2 LITRE CAR.

Company Dynamic market leader, exciting product range, distributed processing hardware. Growth based on success.

Applicant Must be experienced commercial hardware sales. Direct manufacture experience preferred. Communications orientated/technical support background useful.

R36 Salesman North West/Manchester Office  
£6.5K TO £8K BASE, £18K ON QUOTA + CAR  
First class mini equipment into first time commercial user market place. Realistic quota's, no top limit on earnings.

R37 Bureau Salesman North West  
£6K-£5.5K BASE, £10K-£11K ON QUOTA + CAR  
Commercial/Technical systems batch and RJE

R38 Salesman London/North West  
£7.5K BASE, £18K ON QUOTA + CAR  
One of the most successful O. & M. Organisations world-wide. "Bread and butter" commercial systems on first class equipment plus shop floor and word processing availability. Good management, good support, no top limit on earning. MANY OF THEIR SALESMEN EARN OVER £20K.

Write or phone, quoting reference, to C.P.R. Consultants Ltd.,  
432, Denebury Road,  
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Tel: (0532) 774040,  
24 Hour Enquiry Recording.  
Offices also in London & Manchester

## U-C-A NOW LOOK HERE!

### IBM OPERATORS

London and S. Coast £6,000 to £7,000+  
We have a number of vacancies in the Brentford, Enfield, Croydon, City, Brighton and Bournemouth areas for IBM operators with a good knowledge of OS/VS1. Career prospects are up to you! CW 6/1 Simon

### PROJECT LEADER

W. London To £11,000  
A major international chemical company requires a Project Leader with at least 5 years' DP background. The applicant will have experience of leading a project and of on-line systems design. Involvement with DATABASE, CICS and DL1 are advantageous. There are the usual large-company benefits which are excellent. CW 6/2 Patricia

### CONSULTANTS

C. London £9,000 to £16,000  
Now is the time to get in on the ground floor of a large government contract (based around C/2800) that will extend your experience and provide a worthwhile step in your career development plans. As part of this international consultancy handling this contract you will be involved in a major project requiring the highest standards of professionalism. CW 6/3 Michael

### CONTRACT

PROGRAMMERS/ANALYSTS  
UNIVAC 1100 Q80L/RP/ 3 MTHS +  
UNIVAC 1100 DMS 1100 TJP. EXP. 3 MTHS +  
IBM 370 PL1 MVS CICS 3 MTHS +  
IBM PL1 OS/VS1 3 MTHS +  
ICL 2980 COBOL DME VME 3 MTHS +  
Hewlett 8000 IDS TDS COBOL 3 MTHS +  
IBM DLI COBOL DMS 3 MTHS +  
IBM SYST. PROG. 3 MTHS +

Phone Irene for details

Recruitment Consultants  
Universal Computer Associates Limited  
Data Express House,  
Prospect Place, London W4 3BR  
01-995 3883 (01-955 6136 Evenings)

**JBA**

## Systems Programmer

West Germany c. \$475 p.w.

Our Client, a consultancy with offices in Germany and Switzerland, wish to recruit an experienced MVS Systems Programmer to assist with the installation of a large IBM mainframe. Knowledge of IMS is also required and it is expected that this will be a 6-12 month assignment. Immediate start date.  
Contact: Brian Postles

## Consultants

### Aircraft Simulation

\$20,000+ expenses

Paris  
Our Client, an internationally recognised consultancy, requires a number of experienced technicians to work on the development of major Aircraft Simulation systems. Candidates should have a degree or equivalent with at least 3 years real-time software design experience and have the confidence that stems from total familiarity with the unique and often multi-million pound devices associated with this technology. Whilst abroad you will enjoy good overseas allowances as well as the excellent basic salary.  
Contact: Margaret Stevens

## Systems Analysts

London/Bucks based up to £13,000

Our Client, a leading systems house, currently has vacancies for a number of Systems Analysts to assist with the analysis and definition of large real-time applications. Applicants should have a minimum of six years in the analysis and determination of user requirements and should have been involved in at least one significant project using on-line/communications techniques. Must be willing to travel to visit remote users.  
Contact: Jim Baker

## Market Research Consultant

West London/Europe to £12,000+ Car+ Benefits

We have been retained by a leading market research organisation to recruit a Senior Consultant who will be responsible for investigating and reporting on the marketing trends of the data processing industry in Western Europe. Candidates must have a minimum of 5 years experience in data processing and should be familiar with IBM products. This challenging position involves travel both throughout the U.K. and overseas.  
Contact: Isabel Bruce

## Systems Designers

London £12,000+

An internationally recognised systems house need two experienced people to work on the development of a major on-line system. In the early stages a great deal of time will be spent abroad with generous overseas allowances. Five or more years must have been spent in the design and implementation of large on-line commercial systems also extensive knowledge of IBM mainframes. Experience must encompass at least one of the following languages: PL/1 COBOL or Assembler and IMS in a multi IBM environment.  
Contact: Janet Chivers

## Analyst/Programmer

City Neg. to £11,000

An International Bank based in the City have a current need for an experienced Analyst/Programmer to join their existing team specialising in software and hardware support, implementation and development for local and overseas offices. Applicants will have at least 4 years experience in RPG II, preferably being gained in an IBM environment.

The successful candidate will additionally be involved in the analysis and interfacing of various automated office projects into a common network. Usual banking benefits apply.  
Contact: David Hendry

## Banking Analyst

City c. £10,500+ Benefits

The London branch of this prestigious European bank is about to embark on a major programme of new applications development and is seeking an experienced Systems Analyst to play a key role in this project. Experience must consist of at least 18 months Systems Analysis in a Banking environment coupled with a knowledge of foreign exchange and/or money market applications. Long term career prospects are excellent and a good salary is supplemented by attractive fringe benefits.  
Contact: Isabel Bruce

## Senior Programmer

City \$9,000+

Ideal opportunity to join a well established financial organisation who are in the process of installing two DEC 11/70's. To apply, it is essential to have at least two years experience in a DEC environment using BASIC/BASIC+2. Also to have good knowledge of financial applications, plus the ability to deal with users and their problems. Promotion prospects are good as this is a new and developing installation.  
Contact: Janet Chivers

**JAMES BAKER ASSOCIATES,  
International Personnel Consultants,  
32 Savile Row, London W1.  
Tel: 01-439 9311.**

**SOFTWARE**

**HERTS** **TO £11K**  
 Practical experience in design computer systems for automation/real-time process control and monitoring applications. Languages high level and assembler.  
 (PK1511)

**CHIEF PROGRAMMER**

**BERKS** **£13.5K + CAR**  
 7 years' experience of IBM environment - Ability to promote and maintain the highest standards of program development - Familiar with latest IBM methodology - COBOL installations - Information Retrieval - Distributive Processing.  
 (PK1512)

**ANALYST/PROGRAMMER**

**WEND** **TO £11.5K**  
 A minimum of 2 years' Commercial experience, including 1 year COBOL, pref. on IBM or HP to develop business related computer systems. CICS, ICCP, IMAGE, VIEW or QUERY as asset.  
 (PK1514)

**ANALYST/PROGRAMMER**

**BERKS** **TO £12K**  
 Senior position with min. of 2 yrs. PL1/FORTRAN/COBOL exp. IBM configuration working on Manufacturing applications totally committed to DP. Excellent prospects and training.  
 (PK1498)

**ANALYST**

**CITY** **£13K + Mort.**  
 6 yrs. analysis exp. from prog. background - general business applications - Twin 4341s using DATA BASE - substantial company benefits offered.  
 (PK1513)

**S'WARE PROG.**

**C LONDON** **£13K + Mort.**  
 MVS S'ware prog. - 4 yrs. + exp. to work in rapidly expanding site, current plans include a second mainframe, large MINI plus state of the art software.  
 (PK1515)

**PROJECT LEADER**

**SURREY** **TO £12,000**  
 Our client requires a proven analyst with leadership experience who is capable of seeing projects through. Experience in order entry, invoicing and stock control an asset, as is familiarity with Hewlett Packard.  
 (JA1504)

**TECH. SUPPORT**

**MIDDX.** **£12K + CAR**  
 7 yrs. + in DP? Experience with terminal and database orientated systems in commercial environment? Support end-users in banking and financial sectors. Superb benefits in addition.  
 (NW1455)

**SENIOR SYSTEMS ANALYST**

**SURREY** **TO £11,000**  
 You're an analyst with an IBM programming background and experienced in financial or insurance applications. You've been in DP for five years and you want to join a small team about to embark on major developments. You'll be contacting us today.  
 (JA1451)

**SYSTEM PROGRAMMER**

**S.E. LONDON** **C. £11,000**  
 Five years' plus, two on IBM systems. Experienced in MVS - software evaluation, installation and performance. IMS, T.P. Package includes subsidised mortgage.  
 (NW1456)

**CHIEF PROGRAMMER**

**CITY** **TO £12,500**  
 Could you lead a team of 15 programmers? If you're educated to degree level, and have 6 yrs. + experience, some of it on Honeywell 64 or 66 in on-line environment contact us immediately.  
 (NW1454)

**PROJECT LEADER**

**HANTS** **TO £12,000**  
 Graduate with 4 years' + experience MACRO 11 on PDP11s, with RSX 11M to lead team on design and productions of software systems for industrial and radar applications.  
 (NW1281)

**01-404.0152**  
**COMPUTER SEARCH LIMITED**  
 Norwich House, 13 Southampton Place, London WC1

## Passport required for Data Processing Supervisor

With Analyst/Programmer skills  
**c. US \$34000**

**Major Locations**

- South America
- Africa
- Europe
- Middle East
- Far East

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- High Salary
- Excellent Benefits
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Mrs P. W. Frise, PNEI/41 (C6),  
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*Interested candidates should send a brief career history to Ivor Norton at the Harrogate office quoting reference CW/8103. No forms will be issued and complete confidentiality is guaranteed.*

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A site in North London has a requirement for a DEPUTY SHIFT LEADER. The successful applicant will have extensive knowledge of OS/VS1 and MVS and be expected to provide proven supervisory experience. The current hardware configuration comprises an IBM 370/158. Opportunities exist for career advancement. Pleasant working conditions will be found in a quiet part of London on the Middlesex/Hertfordshire borders. Ref: 3223.

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Candidates, male or female, should write in complete confidence, giving details of age, experience, qualifications, career and salary record to date, to: Bob Davies, Personnel Development, BL Systems Ltd, Grosvenor House, Prospect Hill, Redditch, Worcs.



01-283 9941

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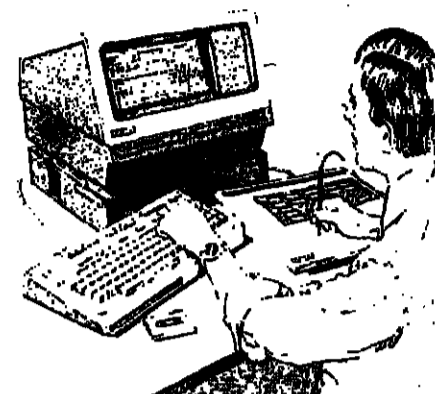
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Applications are invited for a vacancy of Lecturer in the Department of Computer Science. Candidates should have a first or good second class honours degree in mathematics, computer science, or closely related subject together with substantial postgraduate research experience. Applications are welcomed from candidates with research interests in any area of computer science but those whose speciality is artificial intelligence or the development of expert systems will be given particular consideration.

The appointment will date from September 1, 1981, and will be made at the lower end of the salary scale £5,505 £11,575 per annum.

Further particulars and applications forms if copied may be obtained from the Personnel Office, University College of Swansea, Singleton Park, Swansea SA2 8PP, to which office they should be returned by Friday, February 27, 1981.

(4372)

THE UNIVERSITY  
OF SHEFFIELD

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and Applied  
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RESEARCH  
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Applications are invited from graduates in psychology or computer science to join a research group undertaking experimental studies of human factors in computer programming and software engineering. Tenable for three years from a date to be arranged. Initial salary on Range 1B or 1A from £5180 to £8465 a year. Some postgraduate experience is desirable, not necessarily in this field, although programming experience is essential. The Unit is shortly taking possession of an advanced configuration running under Unix. Details from Professor P. B. Warr, MRC/SSRC SAPI, Department of Psychology, The University, Sheffield, S10 2TR. Quoted ref. 8538/88.

(4278)

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For further information write to The Director of Computer Services, Red House (5th Floor), 67 Corporation Road, Middlesbrough, Cleveland TS1 1LY, or telephone Kevin Narey on (0642) 248186, Ext. 2284/1.

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For further information contact: Daphne Roadnight

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Our clients, one of the world leaders in their field, are engaged in the design, manufacture and distribution of accessories and components used in the Electronics, Telecommunications, Aerospace and Electricity Supply Industries. They are enjoying substantial growth having achieved a turnover of more than £14 million in 1980, with a forecasted turnover in 1981 of £20 million.

They wish to appoint a person to fill the above role, reporting direct to the Board, who will be responsible for developing and implementing the Company's D.P. Plans for the future. If your background and experience are commensurate with the following requirements, telephone or write to us now to arrange an early interview in London or the South:

1. Proven management ability gained from heading up a medium-sized D.P. Installation.
2. Sound Systems Development experience associated with the design and implementation of complex on-line systems within a Production environment.
3. Self motivated, with the ability to motivate staff and relate well with all levels of user management.
4. An Engineering related Degree is desirable, or alternatively, a high level of academic achievement will be expected.

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D.P. Appointments & Contract Personnel,  
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INBUCON

## ANALYST/PROGRAMMERS

£8,500-£11,500 p.a. RELOCATION PACKAGE AVAILABLE TO SWINDON

This major corporation is setting up a brand new European Data Centre based on an IBM 4331 network using CICS, TSO, VSAM. The department's offices and computer room are literally being built at this moment. The development plan has been agreed and we now wish to recruit three rather special analyst/programmers; people with the resilience and personality to attain a high level of achievement and professionalism in their work, despite any teething problems that may occur.

The d.p. department reflects the company's dynamic, modern approach to management, giving members an opportunity to press their thoughts and accept responsibilities commensurate with their abilities. The company manufactures very high technology products and its growth over the last decade has been one of the talking points of Wall Street. Now it is a multi-million corporation whose profits enable it to pay top industry salaries. Corporate personnel policies have developed a company where average age is lower, and the average intelligence is higher than normal. The management is results oriented and the company is driving forward from success to success.

These posts represent a real opportunity to gain excellent experience in a modern IBM on-line and database installation. The department is still in its embryonic stage, consequently those capable of making a substantial practical contribution now, in future, enjoy considerably increased salaries and responsibilities. Projects will be technically stimulating giving full satisfaction.

**QUALIFICATIONS:** The only mandatory requirements are a minimum of 4 years' IBM COBOL programming and some exposure to analysis. Naturally, if you have CICS, TSO and VSAM all the better. However, to be successful you must have the personal qualities that ignores job demarcation and instinctively tackles any task necessary to achieve the end result. Intelligence and good communications ability are taken as read. A good relocation package is available.

To join a first-class department, obtain an increase in salary and enjoy the quality of life associated with living in the West of England, contact:

MR. DAVID J. HUTCHINSON ON 01-828 7956

**hutchinson-scoggins**

10 Wilfred Street, London SW1E 6PL. Telephone: 01-828-7956

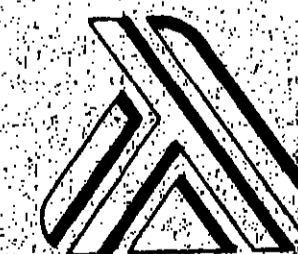
# A NEW YEAR... A NEW CHALLENGE

No doubt you have heard that before, but with Lambda we are confident you will find the challenge of working in America on a variety of projects for our Clients, both exciting and absorbing. Lambda has become one of America's foremost consultancies, operating from seven offices throughout the United States, with a staff of over seven hundred. As part of this continued expansion, our London office recruits staff for employment in America for a minimum term of one year.

If you have two years' COBOL, PL1 or ASSEMBLER plus some IBM experience then we can offer in addition to a very competitive salary, full return airfare, relocation expenses, free medical and dental insurance and provision of the appropriate visa.

So, if you would like to meet the challenge of playing a role in the continued growth and development of the American Computer Industry, now is the time to explore the opportunities.

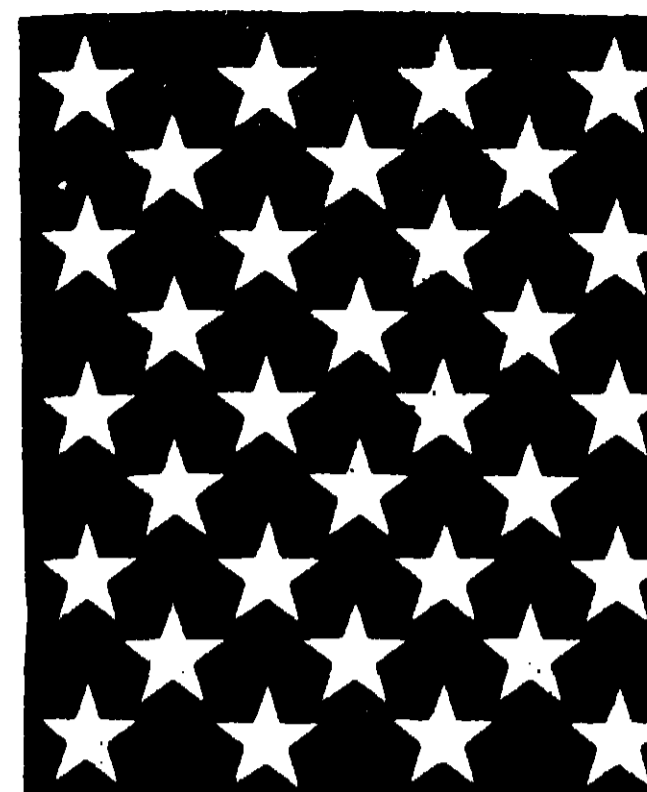
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Tel: 01-486 2101

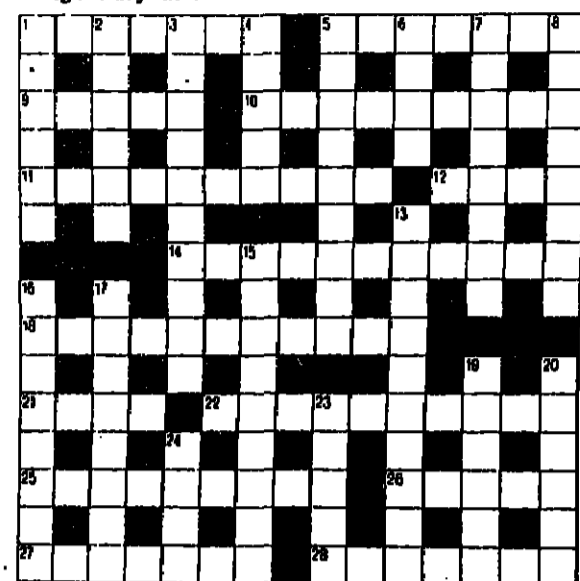
Johnnie 1-11-81



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Compiled by Alec Robins

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Name..... (Miss, Mrs, Ms, Mr)

Address.....

Telephone.....

I accept the rules and conditions of the Computer Weekly Crossword Competition.

Signed..... Date.....

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14. A disgrace, writing it backwards - it affects the eye (11)
16. Swift writing by top journalist with only a skeleton staff (5-6)
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22. Prepared for action - there's a race here before day breaks (2,3,5)
25. A sing type of car used by advocates generally (6-3)
26. Catch a girl with a ring (5)
27. Refresh the others with mineral (7)
28. Ice does melt - see (7)

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2. Covered with sticky stuff the dope upset over me, an old copper (6)
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4. Only Richard will include this song (5)
5. Without reform, world authority about to get suspended (9)
6. Girl's turned up for feast (4)
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2. The competition is open to all holders of Computer Weekly, with the exception of the staff of IPC Business Press Ltd, any printer employed by them or the staff of any such staff.
3. The solution of each puzzle will normally be published in the following week.
4. Winners will receive their prize during the month following the competition.
5. The decision of the editor on the interpretation of the rules and conditions and on all matters shall be final. No correspondence will be entered into.

## COMPUTER FIELD ENGINEERS

Vacancies exist in Southampton and London with top international Co. Applicants must be under 30 with HNC or equivalent. Exp. Sal. + Bonus + S/B + O/T and 21 day holiday. There are other vacancies in Shropshire, Croydon, Swindon, Newbury, Hove, Walsford, Letchworth and London. Sole to EBR + S/B + O/T and exp. (Details of location and salary on request). Call David Atkinson, days 01-994 4471, evenings 01-994 4472 or write: Datacom Computer Field Eng. Ltd., 100, Newbury Road, Reading, RG2 9AT.

# Computer Supervisor

## THE COMPANY

Aberdeen Service Company (North Sea) Limited is one of the major general service companies involved in the North Sea Oil Industry. Its operations encompass the purpose-built South Bay Marine Base at Peterhead, Engineering facilities at Peterhead; the provision of specialist personnel for Offshore Platform Maintenance; Transport; and the supply of Bonded Goods to the Offshore Industry.

## THE JOB

The computer supervisor will be responsible for controlling the day-to-day operations and supervising the computer staff. Other duties will include scheduling work; liaison with user departments; identifying reporting hardware/software faults; and providing holiday and sick leave cover.

## APPLICANTS

Applicants should have a good general education with at least two years' relevant commercial computing experience.

## BENEFITS

Salary and benefits will be commensurate with qualifications and experience. There is a contributory pension scheme and free life assurance. Applications should be made, in writing, to:-

Mr. W. N. Guy,  
Senior Financial Manager,  
Aberdeen Service Company  
(North Sea) Ltd.,  
Gull Base, 25 Gull Street,  
Aberdeen AB1 2NJ.



Onshore Services for Offshore Oil

# ANALYST/PROGRAMMERS

Oxy circle the world on all related projects of many kinds. North Sea Oil developments are an important part of our universe and we have a continuing demand for experienced professionals. We now wish to recruit additional Analyst/Programmers to specialist in business systems development. As an integral part of a small team, you will play a major role in initiating and implementing business systems in liaison with the appropriate user departments. Initially, program development and implementation will be your prime function. Having gained experience, this may also be expanded to include a leadership position in the feasibility study and detail design of interactive data base systems. These positions will suit ambitious young graduates with a minimum of two years' experience in business systems programming. A thorough knowledge of COBOL is essential. Experience with medium to large scale IBM equipment, IMS, CICS-OL, and materials management or financial systems is desirable. Oxy rewards reflect the progressive approach of a world leader, with expertise and ambition fully appreciated. Top salaries, four weeks annual holidays, contributory pension scheme, free life assurance and a comprehensive relocation package.

Write to:  
G. G. Fowler,  
Personnel Officer,  
Occidental Petroleum  
(Occidental Ltd.)  
127 Causeway,  
Aberdeen  
AB10 3TP



Progress around the world



# Technical Support Staff

CROYDON

£6K-£7K

Although most SEGAS are currently running the largest CICS network in the UK, we are still in the development phase. This means an increasing workload for our Technical Support Group, which is why we are looking for more people to take over. We have a number of excellent opportunities for experienced people, also for trainees wanting a new career in Systems Programming, in the following areas:

**Teleprocessing**  
We have approaching 1,000 terminals using ACT/VITAM, CICS/VS and ACT/INCP. Distributed processing systems are being implemented using 8100 and 3680 equipment.

**MVS**  
We have a challenging opportunity for an experienced MVS/JES 2 Systems Programmer who wishes to broaden his/her experience with a wide range of products - such as TSO, RSC/COE, VM/CMS etc., which control our IBM 3032 and Amstar V78.

**Performance Measurement and Capacity Planning**  
To contribute to this work you will need experience of Hardware related timing or performance monitoring in an environment similar to our own. A range of Performance monitoring tools is in use including TESDATA, MS88 hardware monitor. Training will be given where appropriate.

**Database**  
A pilot database is being set up using DLI and there is a great opportunity for someone with experience of IMS/VS/DB. Associated products in use are DATAMANAGER and DB PROTOTYPE.

Job Benefits include: good working conditions; generous holidays; sick pay; pension and insurance schemes; sports and social facilities; relocation assistance; provided in appropriate cases.

For further details please ring John Holmes, Technical Support Manager on 01-686 4466 Ext. 6005 or after 7 p.m., Southampton (0342) 810054, or write, quoting ref. 0.6714/CW, to:  
Personnel Manager, South Eastern Gas, Seag House,  
Katharine Street, Croydon, Surrey CR9 1JJ.

# SOUTH EASTERN GAS

# COMPUTER WEEKLY CLASSIFIED

DIRECT LINE 01-661 0121

the newspaper computer people rely on

# Analyst/Programmer IBM 4331, VM/CMS

C. £7K

Rural Kent

Proprietary Perfumes (International) Ltd. is a leading international perfumery house supplying fragrances for use in a multitude of fast-moving consumer goods.

The recent installation of our own IBM 4331 means that we need to resource our expanding software development by adding to our small team of professionals.

We seek a person capable of independent action to be responsible for systems development from analysis to implementation. Ideally, you will be mid-twenties with, say, two years' experience and knowledge of PL1. Essentially, you will have the ability and potential to grow within the job.

We offer a competitive benefits package including generous relocation assistance and flexible working hours.

Please write or call: Bill Broadbridge, Proprietary Perfumes (International) Ltd., Ashford, Kent TN24 0LT. Tel: (0233) 25777.

P.S. The present configuration is 4331 (1MB), using VSAM and VM/370, with 2 x 3370 disks, 2 x 8809 tapes, 3262 printer, 20 x 327X VDUs with further expansion foreseen.



# DISTRIBUTED SYSTEMS LIMITED

PERMANENT RECRUITMENT DIVISION

**ANALYST/PROG.** Attractive opportunity for self-starter with sound IBM/VM/370 systems exp. and fluent COBOL or BASIC. For small expanding OEM. Central London. Ref. 81/18

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Licensed in accordance with Employment Agencies Act 1973 SE(B) 1699.  
70 Borough High Street, London SE1 1XF  
Tel: 01-403 3456 1568 24-Hour Answerphone (2384)

# SYSTEMS PROGRAMMERS £9,000

A leading financial concern has outstanding career opportunities for experienced systems programmers to provide additional systems support in their data centre situated in Kent's Medway area. These positions offer applicants excellent opportunities to work with the following in-house systems: VM/CMS, OS/VS1, DOS/VS, CICS/VS, IMS, currently running on IBM 370/148 and 3031 hardware. Candidates must possess a solid grounding on OS/VS1 preferably backed by a working knowledge of VM, BAL, CICS and database systems. The company offers excellent salaries, comprehensive company benefits including an excellent relocation package and a convenient and pleasant working environment.

# PRINCIPAL ENGINEERING SYSTEMS ANALYST £11,000+

A challenging opportunity has arisen within a leading American engineering company based west of London. The principal functions of the position are to initiate and direct activities pertinent to the development, maintenance and support of technical and scientific computer systems used throughout the company. In technical analysis and design to maintain and, where possible, enhance the company's competitive position with regard to engineering technology. Candidates must possess a BSc in engineering or science with 8-12 years' total experience or 4-6 years as an Engineering Analyst. Excellent relocation is offered where appropriate.

# TECHNICAL SUPPORT ANALYST £8,500

This position has been created by the above-mentioned engineering company to support the provision of interactive computer services and mini-computer-based applications to a high level of reliability. Applicants must possess a minimum of 3 years' DP experience including an understanding of interactive systems. In addition he/she must be prepared to keep abreast of software/hardware in current use and to provide user training and maintenance of standard/user guides. A working knowledge of API would be a distinct advantage. Excellent relocation is offered where appropriate.

KEY OPERATIONS ASSISTANCE LIMITED  
27 NOEL STREET, LONDON W1  
01-435 7651

# THE SALES BIT

# Hard or soft, selling is an emotive issue

LAST week, I presented buyer react positively at that stage, it may well be that his prime motivation is the desire to feed his inherent megalomania.

However, further questioning may reveal that his principal requirement is to reduce escalating telephone costs, or even to catch whoever it is keeps 'plugging his nose in' to his own other lunch-break.

One thing is certain. It won't be because the machine looks sexy or due to its read-only-memory having an access time two nanoseconds faster than the competition.

Identifying these individual motivations demands a variety of skills and personal attributes, particularly an effective questioning technique, sensitivity, perception and the ability to listen, as opposed to hear. Frequently truth can be perceived in little more than innuendo.

## Motivations

You may think all this sounds obvious. We all know one buys an umbrella to keep off the rain, rather than for the thrill of owning a fabric-covered, collapsible metal frame with a handle. This simple truth, no more profound than common sense, is often overlooked in selling practice.

There is no point in putting forward economy as the main reason for buying a particular car if the potential client is looking for a symbol of his senior status.

On the other hand, the transportation manager for the same company might see economy as the only significant consideration. 'One man's meat is another man's poison'.

Here are some of the motivational forces that reside within the selling arena: security, anxiety, prestige, comfort, affection, sex, health, curiosity, politics, taste, inertia, pride, avarice, megalomania, malice, credibility, acceptance, impulse, popularity, self-expression.

There are others, of course. All the salesman has to do is identify those which are most likely to influence the final decision.

For instance, the salesman may describe the telephone monitoring system he is selling as capable of giving complete management control of individual telephone usage by providing details of all incoming and outgoing calls for every extension in the building.

TRADER

## CONFERENCES

# Electronic mail takes off

ELECTRONIC mail is about to take off in Europe. Results of studies made by the PTT (Germany's KTK, Sweden's Office 85, France's Nore-Minc CCITT, and CBPT Study Group) are now emerging through a series of announcements which indicated the imminent launch of electronic mail on a large scale. The third annual Symposium on Electronic Mail and Messaging goes into the subject in detail and provides a technology update. Organized by the Yankee Group, it will be held from March 23-24 at the Cumberland Hotel, London. Further information from Al Dunn, Yankee Group, Regal House, Lower Richmond Road, Chislewood, Reading RG2 9AT. Tel: (0227) 4714.

The Council's computer configuration comprises an ICL 2804 installation with 84K, ED580's, train printer, 1501 CDE data entry and on-line enquiry from 4 video terminals. The installation has recently been enhanced with on-line facilities (MINIMAC) and an extensive Cash Receipting network.

TEMPORARY HOUSING will be available in approved cases along with generous removal and disturbance allowances together with legal fees on house purchase up to £1,500.

Please contact the Chief Personnel Officer, Council Offices, Woking, Surrey (Tel: STD 04365 5531 Extn. 17) for application form and job description. Closing date: 17th February, 1981.

# Senior Programmer

£8,538-£9,471 p.a. Incl.

We are seeking a Senior Programmer to head a team of four programmers who will be an experienced ICL COBOL programmer with at least one of the following languages: PLAN, T.P.L. or C.D.E. and be skilled in structured programming. The Authority has invested heavily in Computer Resources and is responsible also for providing a service to the neighbouring Boroughs of Surrey Heath and Runnymede.

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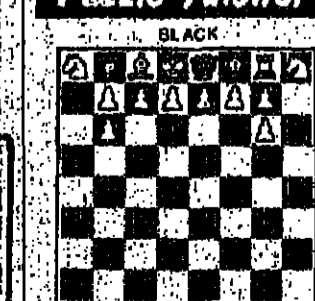


# BOX NUMBERS

Box number replies should be addressed to:

Box Number.....  
c/o Computer Weekly  
Dorset House  
Stanford Street  
London SE1 1LU

# Puzzle Answer



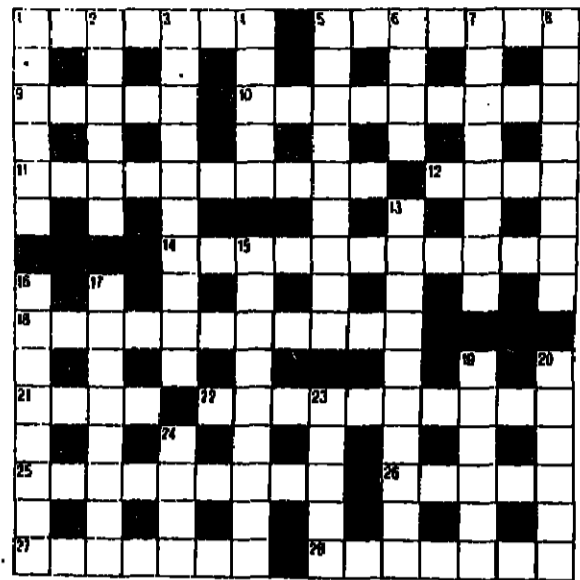
THE middle four pieces on the eighth rank are interchanging.

SELLERS of computer systems, word processing systems, peripherals packaged software and media and supplies are expected to come together in Gander 81, to be held in the Convention Centre in Nevada, Las Vegas. Exhibitors last year included Apple Computer, Inc., Control Data, Honeywell Information Systems and Zilog. The exhibition to be held from November 19-24, will feature scheduled press conferences and the option of direct mail follow-up after the show. For further information, contact the organizers: The Interface Group, 100 Spring Street, Framingham, Massachusetts 01701, USA.

## CW Prize Crossword 13

Compiled by Alec Robins

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Address.....

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## COMPUTER FIELD ENGINEERS

Wanted: Mainframe and minicomputer field engineers in Southern and London with top technical skills. Candidates must be able to work on HEO or equivalent. Salary: £10,000 - £12,000 p.a. O/T and 31 days holiday. Please send CV to: Mr. J. H. Smith, Computer Field Engineers, 100, Strand, London WC2R 0JH. Tel: 01-675 1234. Closing date: 15.02.81.

## Computer Supervisor

## THE COMPANY

Aberdeen Service Company (North Sea) Limited is one of the major general service companies involved in the North Sea Oil industry. Its operations encompass the purpose-built South Bay Marine Base at Peterhead; Engineering facilities at Peterhead; the provision of specialist personnel for Offshore Platform Maintenance; Transport; Property; and the supply of Bonded Goods to the Offshore industry.

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Mr. W. N. Guy,  
Senior Financial Manager,  
Aberdeen Service Company  
(North Sea) Ltd.,  
Gulf Base, 28 Guild Street,  
Aberdeen AB1 2N5



Onshore Services for Offshore Oil

## ANALYST/PROGRAMMERS

Oxy circle the world on all related projects of many kinds. North Sea Oil developments are an important part of our universe and we have a continuing demand for experienced professionals. We now wish to recruit additional Analyst/Programmers to specialise in business systems development. As an integral part of a small team, you will play a major role in initiating and implementing business systems in liaison with the appropriate user departments. Initially, program development and implementation will be your prime functions. Having gained experience, this may also be expanded to include a leadership position in the feasibility study and detail design of interactive data base systems. These positions will suit ambitious young graduates with a minimum of two years' experience in business systems programming. A thorough knowledge of COBOL is essential. Experience with medium to large scale IBM equipment, IMS, CICS, DB, and materials management or financial systems is desirable. Oxy rewards reflective progressive approach of a world leader with expertise and ambition fully appreciated, top salaries, four weeks annual holidays, contributory pension scheme, free life assurance and a comprehensive relocation package. Write to: G. G. Fowler, Personnel Officer, Occidental Petroleum (Caledonia) Ltd, 127 Causewayend, Aberdeen, AB2 3TP



Progress around the world



## Technical Support Staff

CROYDON

£6K - £11K

Although we at SEGAS are already running the largest CICS network in the UK, we are still in the development phase. This means an increasing workload for our Technical Support Group - which is why we are looking for more people at all levels. We have a number of excellent opportunities for experienced people, also for trainees wanting a new career in Systems Programming, in the following areas:

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For further details please ring John Holmes, Technical Support Manager on 01-468 4466 Ext. 6005 or, after 7 p.m., Sharpphone 03421 810054, or write, quoting ref. C&714/CV to: Personnel Manager, South Eastern Gas, Segas House, Katharine Street, Croydon, Surrey CR9 1JU.

## SOUTH EASTERN GAS

## COMPUTER WEEKLY CLASSIFIED

DIRECT LINE 01-661 0121

the newspaper computer people rely on

## Analyst/Programmer IBM 4331, VM/CMS

C. £7K

Rural Kent

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(4384)

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Please contact the Chief Personnel Officer, Council Offices, Woking, Surrey (Tel: STD 04362 8931 Extn. 17) for application form and job description. Closing date: 17th February, 1981.

Woking  
BOROUGH COUNCIL

## BOX NUMBERS

Box number replies should be addressed to:

c/o Computer Weekly  
Dorset House  
Standard Street  
London SE1 8CU

## THE SALES BIT

## Hard or soft, selling is an emotive issue

LAST week, I presented some thoughts on why people buy and the difference between the product they buy and the need or desire they are consciously or subconsciously wishing to satisfy.

This week, I would like to present a different aspect of the same situation; that is, "People do not necessarily buy the same product for the same reasons".

Inasmuch as the permutation of individuals and their particular situations is infinite, the chances of two people in similar circumstances having the same motivations for the same very remote.

People cannot be arbitrarily categorised in terms of what is likely to turn them on or off and to assume in general to be mistaken.

It is essential, therefore, that salespeople develop the skill to identify these emotional factors quickly, for without this level of understanding it is impossible to present the reasons for purchase that the buyer wishes to hear.

There is no point in putting forward economy as the main reason for buying a particular car if the potential client is looking for a symbol of his status.

On the other hand, the transportation manager for the same company might see economy as the only significant consideration. 'One man's meat is another man's poison'.

## Megalomania?

For instance, the salesman may describe the telephone monitoring system he is selling as capable of giving complete management control of individual telephone usage by providing details of all incoming and outgoing calls for every extension in the building.

Here are some of the motivational forces that reside within the selling arena: success, anxiety, security, prestige, comfort, affection, sex, health, curiosity, politics, taste, inertia, pride, aversion, megalomania, malice, credibility, acceptance, impulse, popularity, self-expression.

There are others, of course. All the salesman has to do is identify those which are most likely to influence the final decision.

TRADER

## CONFERENCES

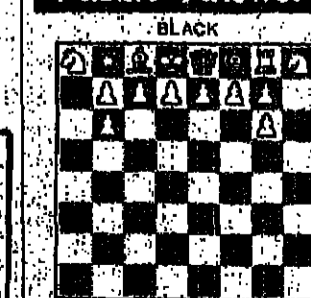
## Electronic mail takes off

ELECTRONIC mail is about to take off in Europe. Results of studies made by the PT's (Germany's RTK, Sweden's Office 85, France's Non-Mine CCITT, and CBIT Study Group) are now emerging through a series of announcements which indicated the imminent launch of electronic mail on a large scale. The third annual Symposium on Electronic Mail and Messaging goes into the subject in detail and provides a technology update. Organised by the Yankes Group, it will be held from March 23-24 at the Cumberland Hotel, London. Further information from Al Dunlop, Yankes Group, Reed House, Lower Richmond Road, Chislehurst, Kent, Tel: 01-893 8040.

THE International Computing Symposium this year reports on the state of the art of systems architecture. The aim is to foster the exchange of ideas between scientists, computer professionals, engineers and managers on problems, new techniques and trends in systems architecture. Among the 76 speakers and authors to address the conference will be Computer Weekly columnist Tom Gills. The conference is sponsored by Computer Communications and Microprocessors Journals. It will be held from March 30-April 1 at the Institute of Education, University of London. Fee is £120 + VAT for ACM members and £140 + VAT for non-members. Details from IPC Conferences, Surrey House, Thimbleway, Sutton, Surrey, Tel: 01-443 8040.

SELLERS of computer systems, word processing systems, peripheral packages, software and media and supplies are expected to come together at Comdex 81, to be held in the Convention Centre in Nevada, Las Vegas. Exhibitors last year included Apple Computer, Inc., Control Data, Honeywell Information Systems and Zilog. The exhibition, to be held from November 19-22, will feature scheduled press conferences and the option of direct mail follow-up after the show. For further information contact the organiser: The Interface Group, 100 Speen Street, Framingham, Massachusetts 01701, USA.

## Puzzle Answer



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Further particulars may be obtained from the Secretary of the University of Glasgow, Glasgow, G12 8QQ, with whom applications (8 copies), giving the names and addresses of three referees, should be lodged on or before February 27, 1981.

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